DOCUMENT RESUME

ED 221 738 CE 033 918

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TITLE Fire Prevention Inspection Procedures.

INSTITUTION Wisconsin State Board of Vocational, Technical, and Adult Education, Madison. Bureau of Program Development and Operations.
PUB DATE [80]
NOTE 86p.
AVAILABLE FROM Wisconsin Board of Vocational, Technical and Adult Education, P.O. Box 7874, 4802 Sheboygan Avenue, 7th Fl., Madison, WI 53707 (Free to educational agencies).

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS *Alarm Systems; Behavioral Objectives; Check Lists; *Fire Fighters; *Fire Protection; *Fire Science Education; *Inspection; Lesson Plans; Postsecondary Education; Recordkeeping; *Records (Forms)
IDENTIFIERS *Hazards; Wisconsin

ABSTRACT

Lesson plans are provided for a fire prevention inspection course of the Wisconsin Fire Service Training program. Objectives for the course are to enable students to describe and conduct fire prevention inspections, to identify and correct hazards common to most occupancies, to understand the types of building construction and occupancy, and to prepare and maintain inspection reports and records. Material for each lesson is presented in this format: course title, lesson title, equipment required, training aids needed, and a content outline that provides detailed instructor notes (behavioral objectives, and references) and teaching points. Topics covered in the 11 lessons are introduction (history of fire prevention), fire protection organizations, authority for fire protection, the fire inspector, inspection procedures, records and reports, building construction, classification of hazards--occupancy and maintenance hazards, fire protection devices, exits, and limitation of the fire spread. Some sample forms, checklists and drawings are provided within the lesson plans. (YLB)

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FIRE PREVENTION INSPECTION PROCEDURES

Prepared

by

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The assistance and advice furnished by the following organizations and individuals in the preparation of this course is gratefully acknowledged.

Division of Industrial Safety
and Buildings - Dept. of Industry,
Labor and Human Relations
John Wenning, Administrator
Marvin Olson, Chief, Fire
Prevention Section

Fire Service Training Program
State of Washington

Truman Severson, Jr.

Captain James Dayton
Fire Prevention Bureau
La Crosse Fire Department

Chief Russell Anderson
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Vocational Education Consultant
Wisconsin Board VTAE

Frank Kloss
Fire Service Training
Western Wisconsin Technical Institute,
La Crosse, Wisconsin

Merl Gillett
Fire Service Training
VTAE District 1
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REFERENCE MATERIAL

Building and Fire Codes

Wisconsin State Fire Prevention Manual
Division of Industrial Safety and Buildings
Department of Industry, Labor and Human Relations
201 East Washington Avenue
Madison, Wisconsin 53702

National Fire Protection Association Publications
470 Atlantic Avenue
Boston, Mass. 02110

Bond, H., N.F.P.A. Inspection Manual
National Fire Codes, 1973-74 Volumes 1 to 10
Tyron, George H., Editor, Fire Protection Handbook 12th & 13th editions

Other References:

Municipal Fire Administration 7th edition, International City Managers Association, 1313 East 60th Street, Chicago, Illinois 60637

Fire Prevention and Inspection Practices 4th edition, International Fire Service Training Association, Fire Protection Publications, Oklahoma State University, Stillwater, Oklahoma 74074

WISCONSIN FIRE SERVICE TRAINING

FIRE PREVENTION INSPECTION

The objective of this course is to provide instruction that will enable the students to:

a. Properly describe and conduct fire prevention inspections.

b. Identify and correct hazards common to most occupancies and those that occur in specific occupancies.

c. Understand the types of building construction and occupancy.

d. Prepare and maintain inspection reports and records.

WISCONSIN FIRE SERVICE TRAINING
LESSON PLAN

CODE-FPI-A-74
TIME:

COURSE: FIRE PREVENTION INSPECTION
LESSON: INTRODUCTION
EQUIPMENT REQUIRED: NONE
TRAINING AIDS: NFPA FIRE PROTECTION HANDBOOK - 12th or 13th Ed.
MUNICIPAL FIRE ADMINISTRATION 7th Ed.

INSTRUCTORS NOTES	TEACHING POINTS
Behavioral Objective The learner will be able to articulate and explain the the history and responsibility of government for fire prevention.	**History of Fire Prevention** Fire prevention and protection services were known to have been provided as early as 24 B.C. in Rome. These men were known as Vigales, watchmen by night and firefighters when required. The Fire Department of Rome, Italy bears this title on their badges today. The habits of people and the construction utilized in the early centuries of our world created many fire problems and disasters. As a result of these problems, laws and training of personnel to combat them were adopted. William the Conqueror, King of England in the 10th Century established a curfew for the extinguishment of all fires. (1) as a method of fire prevention (2) to prevent use of fire as a weapon in civil disturbances.

INSTRUCTORS NOTES	TEACHING POINTS

In 1177 the officials of Canterbury Cathedral recognized the conflagration hazards created by shops and dwelling built too close and

(1) bought the property, demolished and rebuilt them at a safe distance.

Severe fires in England in 1563 led to the establishment of some Fire Regulations:

(1) prohibited construction or use of wooden chimneys.
(2) prohibited the operation of flammable hazard processes in buildings.

The first serious fire in what we know as the United States, occurred in Jamestown in 1608.

(a) destroyed shelter and food needed by the settlers for their survival.
(b) the survivors were either killed by indians or disease and exposure which forced the abandonment of the Settlement in 1610.

Numerous fire regulations were established in the colonies.

1631 - Boston banned thatch roofs and wooden chimneys.

1653 - Boston - Each homeowner had to provide a ladder and ten foot swab for use in fire extinguishment.

1648 - New York - First American fire protection unit known as the "Rattle Watch" was established.

1752 - Philadelphia - First successful fire insurance company.

(1) issued fire marks to customers.
(2) provided fire fighting services to customers ONLY.

1855 - New York - The National Board of Fire Underwriters was founded.

INSTRUCTORS NOTES

TEACHING POINTS

The purpose of this organization was to:

(1) share insured losses.
(2) set uniform insurance rates.
(3) prevent arson.
(4) improve fire prevention and protection services.

The Chicago Fire of 1871 created havoc and because of a lack of fire safety regulations -

(1) destroyed 17,340 buildings.
(2) killed between 150-300 citizens.
(3) caused a $2,000,000.00 loss to insurance companies.

and caused -

The National Board of Fire Underwriters to demand reforms in 1874 such as:

(1) establishment of permanent fire limits.
(2) adoption of strict building laws and their enforcement.
(3) re-organize the fire department, without political influence and establish discipline.
(4) increase water supply.
(5) create fire prevention bureau.
(6) provide ordinances for the abatement of specific hazards.

The Common Council of the City of Chicago failed to comply with the requests of the NBFU with the result:

(1) all insurance offices were closed by the NBFU and only reopened 2 months later when the City officials complied.

One of the most effective results of this action was the compliance with NBFU regulations by other cities which brought the importance of fire prevention to the public.

Fire Prevention Day was created in 1911.

INSTRUCTORS NOTES	TEACHING POINTS

Fire Prevention Week beginning with or including October 9th (the anniversary date of the Chicago fire) was established in 1922.

Because of the many factors involved -

(1) increase in population.
(2) establishment of high value districts.
(3) efforts of insurance carriers.
(4) loss of life.
(5) scope of fire protection problems.

Fire Prevention became an increasing responsibility of government.

Fire Prevention is the responsibility of:

(1) the Federal Government.
(2) the State Government, Department of Industry, Labor and Human Relations, Division of Industrial Safety and Buildings.
(3) local Government

a. Mayors, Presidents, Chairman of cities, villages or towns.
b. Fire Chief
c. Fire Marshal
d. Building department
e. Law enforcement agencies
f. Fire Department personnel

Successful fire prevention programs in a community are the result of cooperative efforts by all units of government. Combined fire prevention and protection activities by the total fire force is an accepted policy.

(1) importance of fire prevention program in grading of fire defences by the Insurance Services Office.
(2) company in-service inspections in addition to Fire Prevention Bureau activities in most large departments.

WISCONSIN FIRE SERVICE TRAINING
LESSON PLAN

CODE-FPI-1-A-74
TIME:

COURSE: Fire Prevention Inspections
LESSON: Fire Protection Organizations
EQUIPMENT REQUIRED: None
TRAINING AIDS: NFPA "Fire Protection Handbook" 12-13th Ed. "Municipal Fire Administration", 7th Ed.

Instructors Notes	Teaching Points
Behavioral Objectives The learner will be able to identify the primary Fire Protection Organizations, their aims and functions such as publishing, research, testing and educational activities.	**FIRE PROTECTION ORGANIZATIONS** The Insurance industry exercises great influence on fire prevention activities along with public agencies and private organizations. Other organizations, research, testing and educational, provide training and technical advice in developing regulations, laws and codes. In 1895 the National Fire Protection Association was organized in Boston. Its membership is open to: (1) Societies (2) Institutions (3) Associations (4) Insurance Agencies Associate Membership to: (5) Corporations (6) Schools (7) Libraries (8) Individuals This organization promotes the improvement of fire provention and protection. It obtains and circulates information and its members cooperate in the establishment of the National Fire Codes among others. Among its other services are: (1) Publication of books, manuals, records, pamphlets, bulletins and news releases. (2) National Fire Prevention Contests. (3) Magazines - Fire Journal, Fire Command, Fire News Letter and a year book.

Instructors Notes

Teaching Points

(4) Providing technical assistance such as:

a. Standards
b. National Fire Codes
c. Model Ordinances

(5) Annual meetings and conferences.

(6) Collects, analyzes and publishes fire records.

1948 - Society of Fire Protection Engineers formed as part of the NFPA.

The National Board of Fire Underwriters was formed in 1855 and renamed the American Insurance Association in 1964.

The Association furnishes -

(1) Statistical - educational and engineering services..

(2) Assistance to State Fire Marshal Bureaus.

(3) Fire prevention and engineering services -

a. municipal surveys
b. codes and standards
c. research reports

(4) National Building Codes

Both the NBFU and the AIA provided rating and/or municipal survey services to communities of 25,000 or more.

In cities, villages or towns of less than 25,000, these services were provided in Wisconsin by the Fire Insurance Rating Bureau.

All municipal survey services are now performed by Insurance Services Office-National or Insurance Services Office-Wisconsin, successor to the American Insurance Association.

Instructors Notes	Teaching Points
	The NBFU and the AI were concerned primarily with prevention and insuring against loss from fire. While the ISO insures for fire, they also provide general casualty, liability and other types with the exception of life insurance. The ISO may provide municipal survey services in the State of Wisconsin but the rates for fire insurance are established by the Insurance Commissioner's Office, a state agency. Factory Mutual Engineering Division is a group of associated companies assisting policy holders in the protection of their property from fire loss. Some of the other services provided by this organization are: a. Plant inspections and surveys. b. Development of recommended practices for - (1) electrical systems. (2) fire protection hydraulics. (3) building construction safety. (4) hazardous materials. c. Publication of Handbook of Industrial Loss Prevention. d. Testing Services (1) materials. (2) fire protection devices and equipment. Factory Insurance Association specializes in service to industry including but not limited to - a. engineering. b. supervisory inspections. c. loss adjustment. d. inspection service. (1) regular (2) maintenance and/or restoration of fire protection services.

Instructors Notes | Teaching Points

e. laboratory services - training

(1) fire protection operations.
(2) proper use of fire protection devices.

f. engineering and research.

National Bureau of Standards (US)

a. Conducts research on the fire resistant properties of building construction components.

b. Investigates causes of fires and fire hazards of materials.

c. Develops codes and standards.

Underwriters' Laboratories

Organized in 1894 as a non-profit organization designed to examine and test devices, systems and materials to determine their relation as a fire or life hazard. This group publishes approved lists of various materials, systems and devices.

Federation of Mutual Insurance companies provide technical and educational publications.

Bureau of Mines (US)

a. Provides research in the use or control of the following items:

(1) mine fires
(2) respiratory protection devices
(3) combustible metals
(4) static electricity
(5) explosives
(6) dust and gas explosions

Bureau of Explosives

A division of the Association of American Railroads which investigates and develops information pertaining to the safe handling and transportation of explosives or other hazardous materials.

Instructors Notes	Teaching Points
	American Gas Association Passes on the safety of gas appliances and develops standards for their manufacture, installation and use. International Association of Fire Chiefs Cooperates in the development of standards, training and administration of fire protection activities. International Association of Fire Fighters Collects and publishes information of interest to fire fighters. International Association of Electrical Engineers. Provide statistical information on electrical fires and advice in the development of national electrical codes. Atomic Energy Commission Is a source of information and technical assistance in emergencies involving nuclear products.

COURSE: Fire Prevention Inspection
LESSON: Authority for Fire Protection
EQUIPMENT REQUIRED:
TRAINING AIDS: NFPA Fire Protection Handbook and Inspection Manual
Wisconsin State Fire Prevention Manual

INSTRUCTORS NOTES	TEACHING POINTS

BEHAVIORAL OBJECTIVES

The learner will be able to define the process of authority used in the formation of regulatory acts, and differentiate between the responsibilites of National, State and Local Governments as well as the meaning of "eminent domain" and "statutory law".

AUTHORITY FOR FIRE PROTECTION

The United States operates as a Democratic Republic with government by the majority rule of its citizens. The citizens individual rights that may be in conflict with the laws of the nation, state or municipality can be restricted. However the undue restriction of these rights is prevented by the use of:

a. Due process of Law.
b. Right of appeal.

The Constitution defines the rules stating that the government is responsible for -

Laws and regulations to maintain order in our society.

Protection of individuals against individuals - individuals against the state or state against individuals.

Establishment of Rules for creation of -

(1) State and local governments

(2) State and local units use same principles in the creation of codes and ordinances.

Laws or rules generally fall into three groups -

(1) Constitutional Law: Rights and rules laid down in the constitution.

(2) Statutory Law: Those laws enacted by either national or state legislators.

(3) Common Law: Law of custom, result of court decisions, etc.

Instructors Notes	Teaching Points
Note: At this point in course it is suggested that the Office of Chief, Fire Prevention, DILHR, GEF Building, Madison 53702 be contacted for a member of the staff to act as a resource person during the discussion of these codes.	All of the preceeding may deal with following: (1) Eminent domain; right of the community to obtain through forced sale and make payment to the seller. (2) Statutory law; civil or criminal violators may be subjected to the penalties provided. The main concern of the Federal Government in fire protection is limited to: a. Interstate or International (1) Transportation of hazardous materials. (2) Railroads, marine, air and highways. (3) National Forests or state forests using federal funds. Implementation of other fire protection codes and ordinances are left to the states and municipalities. In the State of Wisconsin The Division of Industrial Safety and Buildings of the Department of Industry, Labor and Human Relations has the responsibility for - 1. Fire Prevention 2. Enforcement of the Wisconsin Administrative Codes as indicated in the Wisconsin State Fire Prevention Manual such as: Chapter 1 - Safety Chapter 5 - Explosives Chapter 7 - Cleaning and Dyeing Chapter 8 - Flammable Liquids Chapter 9 - Liquified Petroleum Gases Chapter 21 - Spray Coating Chapter 50-59 - Building Chapter 65 - Fire Prevention

Instructors Notes	Teaching Points

The Fire Marshal Bureau of the Department of Justice has the responsibility for the suppression of arson through:

Investigation
Prosecution

Municipalities are responsible for:

Regulations controlling local government through laws and ordinances which may take the form of:

Codes
Permits
Licenses

Fire Safety laws generally fall into two classes:

1. Relating to buildings or building codes.

2. Transportation, storage and handling of hazardous materials and/or hazardous operations fire code.

Frequently an overlapping of laws, codes or ordinances occurs. This can be resolved by:

Cooperative plan examination having building department responsible for initial requirements and fire department responsible for maintenance.

Where a conflict in laws and codes occurs the senior unit will take precedence, for example:

U.S. over state
State over County
Building code over ancillary codes such as:

Fire
Zoning, etc.

To prevent conflict codes should be cross indexed.

Laws pertaining to the rights of municipalities to produce codes, issue permits, inspect premises for fire, health or safety reasons have never been challenged.

Instructors Notes	Teaching Points
To illustrate this problem this material relating to see vs. city of Seattle has been taken from Fire and Command Publication of Seattle Community College and Washington Fire Service Training Program.	however - Methods of enforcement have been challenged. See vs. City of Seattle a. Case history (1) Original inspection February 14, 1963. Mr. See refused inspection of locked portion of premises. (2) Mr. See was tried and found guilty in: (a) Municipal Court (b) Superior Court, King County (c) Supreme Court, State of Washington. b. Appeal to U.S. Supreme Court on October 10, 1966. The court held that access to portions of a business not open to the public could be forced only by warrant procedure. c. The Courts decision clarified and reaffirmed. (1) the government's duty to inspect. (2) right of immediate entry in cases where an emergency situation is indicated. (3) normal inspections should proceed without warrants unless a citizen complains or their is other good reason for immediate entry. d. The U.S. Supreme Court laid out certain preliminary requirements which if met would simplify proceedings of warrants and more or less guarantee convictions being upheld. They are: (1) Establish absolute identification. (a) badge with number (b) I.D. card with photograph.

Instructors Notes | Teaching Points

(2) Brief staff on procedure to initiate inspection.

(a) Verbal identification.
(b) Show I.D. card.
(c) Explain inspection objective.
(d) Request permission to inspect.
(e) Invite owner/occupant to accompany inspector.

(3) Develop formal written inspection procedures stating:

(a) When.
(b) How.
(c) What.
(d) Where.

(The above should be a matter of public record.)

(4) The fire prevention authority should outline:

(a) Procedures for obtaining warrants.

(b) Procedures for making arrests.

(5) Develop a good records system to include:

(a) Inspection dates.
(b) Inspector's name.
(c) Hazards detected.
(d) Corrections obtained.

(6) Review licensing and permit procedures.

(a) They must indicate inspections will be made for compliance.

(b) Refusal of entry justifies automatic denial of license or permit.

(7) Ensure inspectors are well trained in:

(a) Recognition of hazards.
(b) Procedures and techniques of inspections.
(c) Laws and ordinances they are to enforce.

WISCONSIN FIRE SERVICE TRAINING
LESSON PLAN

CODE-FPI-3-74
TIME:

COURSE: FIRE PREVENTION INSPECTION
LESSON: THE FIRE INSPECTOR
EQUIPMENT REQUIRED:
TRAINING AIDS: NFPA INSPECTION MANUAL MUNICIPAL FIRE ADMINISTRATION

INSTRUCTORS NOTES	TEACHING POINTS
Behavioral Objectives The learner will be able to: Explain the main facets of the inspectors job. Describe the means by which the work is accomplished. Indicate the basic knowledge he must possess to perform inspections. Be sensitive to occupant reactions and identify the methods used to overcome negative attitudes and critical situations.	THE FIRE INSPECTOR What is he? a. salesman b. hazard investigator c. law enforcement officer d. reporter e. safety consultant The use of a "sales approach" is the best tactic as it helps to: (1) reduce fears and tensions (2) improve cooperation (3) result in a fire-conscious occupant and safer property. Appearance is an important factor - he should be: (a) neat and clean. (b) in uniform with badge in sight. (c) shoes shined - hair combed. (d) courteous and pleasant. Do sell the program to the person or persons being inspected - explain the benefits to be gained by preventing fires which may result in: (1) loss of production. (2) loss of buying power in the community. (3) loss of sales and records. (4) uninsured or uninsurable losses to owners. (5) LOSS OF LIFE. Explain to the occupant how the inspection program relates to more efficient fire protection because fire department personnel will know:

INSTRUCTORS NOTES

TEACHING POINTS

a. location of hazards in the building.
b. most efficient points of forcible entry into building with minimum damage.
c. how to work in and around the building, structural aids in confinement of fire.
d. location of plant fire protection equipment, external water supplies, hydrants etc., and exposure hazards.

The fire inspector must be able to recognize hazards that can cause fires and assist the occupant in correcting them. Some fire causes common to most occupancies are listed below:

(1) heating and cooking.
(2) smoking and matches.
(3) electricity.
(4) rubbish
(5) open flames and sparks.
(6) flammable liquid.
(7) spontaneous heating.

In addition the inspector must be able to relate these and other causes to building structure and occupancy type to determine:

a. probable rate of fire spread.
b. life hazard.
c. adequacy of private fire protection.
d. effectiveness of fire separations.
e. condition of exits and exit lighting.
f. exposure hazards - interior and exterior.

The law enforcement aspects of the fire inspector's work will include recognizing violations of codes; ordinances and laws pertaining to fire hazards and to the following:

1. occupancy violations relating to:
   (a) fire limits or zones.
   (b) building use or type.
2. health and sanitation codes.
3. lack of required inclosures.
4. additions to buildings.

Any of the above noted by the inspector should be reported to the agency having jurisdiction, ie: Building Dept., Health Dept., Dept of Industry, Labor and Human Relations.

INSTRUCTORS NOTES

TEACHING POINTS

The inspector must utilize his training and intelligence in preparing inspection reports to identify deficiencies.

Some methods of accomplishing this are to use:

a. Your eyes -

(1) different people see different things.
(2) use your power of observation.
(3) ask questions about the things you observe.
(4) don't become involved with one problem to the exclusion of others.
(5) record violations as they are found - relate them to the rest of the occupancy.

b. Your ears -

(6) remarks or statements by person accompanying you on inspection tour.
(7) employee complaints of fire safety violations or hazards.

c. Your nose -

(8) leakage of dangerous chemicals or gases.
(9) odor of flammable vapors or gases.

d. Analyze these against knowledge gained through:

(11) experience
(12) codes
(13) chemistry of fire
(14) safety standards

as well as the construction and occupancy of the premises being inspected.

INSTRUCTORS NOTES	TEACHING POINTS
	Another facet of the inspectors job is to act as a safety consultant conferring with those responsible for elimination of hazards pertaining to: Housekeeping Conditions. Safe storage of hazardous materials. Where to get needed information. How to obtain permits. Types of approved fire protection equipment and their location in the plant. and the reasons for violations being recorded including the means of correcting them. REMEMBER The inspector represents his community and fire department. When making inspections - (1) never argue, become upset or abusive. (2) do leave as diplomatically as possible. (3) refer items that cannot be resolved at the scene to the agency having jurisdiction.

WISCONSIN FIRE SERVICE TRAINING
LESSON PLAN

CODE-FPI-4-74
TIME:

COURSE: FIRE PREVENTION INSPECTION
LESSON: INSPECTION PROCEDURES
EQUIPMENT REQUIRED:
TRAINING AIDS: NFPA FIRE PROTECTION HANDBOOK, INSPECTION MANUAL, WISCONSIN STATE FIRE PREVENTION MANUAL

INSTRUCTORS NOTES	TEACHING POINTS
Behavorial Objectives The learner will be capable of: Preparing for an inspection, including personal preparation, research required, materials and equipment needed. Describing the conditions requiring consideration and evaluation when property is inspected. Explaning the proper inspection procedure from introduction to exit interview.	**INSPECTION PROCEDURES** Preparation (1) Select building or property to be inspected. (2) Review occupancy hazards and code requirements for occupancy selected. a. reports of previous inspections. (3) Personal attitude and appearance. Equipment (1) identification - badge, ID card, etc. (2) note paper or inspection forms. (3) pen and pencils. (4) flashlight. (5) fittings for testing standpipe threads. (6) water flow gauges and pitot tube. (Where required for flow tests) (7) clipboard (8) Inspection Handbook (NFPA), Wisconsin State Fire Prevention Manual, and previous inspection reports. When approaching the property and buildings to be inspected consider: 1. The surrounding area: a. types of construction and occupancy. b. age and maintenance of these structures. 2. Conditions affecting apparatus response and department operations such as: a. grade, accessibility, condition of streets. b. location and availability of water supply. c. location and standpipe and sprinkler systems.

INSTRUCTORS NOTES

TEACHING POINTS

d. Location of nearest fire alarm box or telephone for notification.
e. Exterior exposures and hazards.

3. General construction of the buildings:

a. type.
b. construction.
c. number and condition of exits.
d. hazards common to occupancy type.

Beginning the Inspection

1. Enter through the main entrance, proceed to the main office and contact the owner, lessee or responsible person.

2. Introduce yourself, stating your name, rank and reason for your visit. Display your identification, badge, ID card, etc., if requested to do so.

3. Explain the purpose of, and request permission to inspect the premises.

4. Secure the necessary information for your report such as:

a. name, address, telephone number of owner, lessee or agent. (Be sure to get correct titles.)
b. additional preliminary information to complete report.

5. Request an employee of the company to accompany the inspector to:

a. unlock closed areas.
b. provide additional information relative to processes, problems, permits, etc.

6. If permission to inspect is refused note this fact on the inspection form with the reason given for the refusal and request the person making the refusal to sign the form.

INSTRUCTORS NOTES

TEACHING NOTES

INSPECTION ROUTES

The inspector selects the inspection route not the occupant - avoid guided tours.

In large or complicated properties -

1. make an initial inspection to establish the total layout and the relationship of:

   a. buildings.
   b. water supplies.
   c. access.
   d. special hazards and other special features of buildings and operations.

2. Request a copy of layout or floor plan of large properties.

3. Decide on method of preparing reports utilizing inspection routing.

4. Be prepared to make separate reports in large structures with varied occupancies and managements.

IN ORDINARY PROPERTIES

Start at roof to:

a. observe plot and floor plan.
b. locate division walls, stairwells, shafts, openings, fire escapes, etc.
c. types of roofs and roof structures.
d. begin fire escape and standpipe inspection.

Inspect attics, cocklofts and each floor individually.

Be thorough -

a. prepare notes.
b. make sketches or drawings.
c. list hazards observed

Use same procedures for yards and courts.

INSTRUCTORS NOTES	TEACHING NOTES
	During the exit interview insure that the owner, lessee or occupant understands the purpose and results of inspection and attempt to: 1. clarify problem areas encountered. 2. check on status of required permits. 3. issue allowable verbal instructions. 4. provide desire to correct deficiencies and resolve conflicts. DO express your thanks for the courtesies extended to you.

BASIC INSPECTION CHECKLIST

I. Checking adequacy and maintenance of Fire Protection equipment.

A. Divided into three sections.

1. Fire extinguishing equipment

(a) Extinguishers.
(b) Standpipes. (Wet or Dry)
(c) Sprinkler Systems.
(d) Fire Department Connections.
(e) Hose Houses.
(f) Fixed Systems (CO-2-Dry Chemical, etc.)

2. Devices to limit spread of fire

(a) Fire Doors
(b) Wire Glass Windows and Shutters
(c) Fire Walls
(d) Fusible Link Covers or Roof Vents
(e) Curtain Boards
(f) Shutters or Clampers in Ducts and Shafts

3. Fire detection and alarm equipment

(a) Manual Fire Alarm Boxes (local or direct line)
(b) Waterflow (Sprinkler systems)
(c) Valve Supervision
(d) Smoke Detection
(e) Heat Actuated Devices
(f) Method of Transmission
(g) Central Station Supervised or Proprietary System

II. Housekeeping

A. Smoking

1. Restricted areas posted -- approved areas furnished.
2. Adequate ash trays.

B. Rubbish Disposal

1. Covers on cans, dumpsters, etc.
2. Removed each night.
3. Proper containers and locations for rubbish awaiting removal.
4. Paper or wooden boxes and barrels should not be used.

C. Packing Material

1. Proper facilities for handling.
2. Only small amounts in building at one time.
3. Approved storage bins with covers.

D. Storage of Old, Unused Combustibles on Premises (Attics or Basements)

E. Outdoor Housekeeping

1. Regular removal of trash and rubbish from yards, courts, etc.
2. Remove grass, weeds, debris.
3. Evidence of outdoor burning.

F. Cleaning and Maintenance Material

1. Locations and types.

III. Storage Items

A. Piling in General

1. Adequate aisles.
2. Firefighting clearance above piles.
3. Access to fire extinguishing equipment.
4. Hazardous materials separated.
5. Fire doors or means of egress clear.
6. Stock subject to water damage on pallets.
7. Storage in illegal locations.
   (a) Attics and basements.
   (b) Basements without required sprinkler system protection.
   (c) Flammable Liquids.
      (1) Liquids in safety cans.
      (2) Cabinets
      (3) Storage Rooms
      (4) Drums outdoors

B. Means of Egress

1. Locked doors.
2. Fire doors wedged or means of egress blocked.
3. Panic hardware.
4. Exitways blocked by storage.
5. Storage under stairways.
6. Fire escapes rusted, broken, loose bolts.
7. Location of exits blocked by lights, stock or signs.
8. Marking of exits.

IV. Electrical Checklist

A. Proper Fusing

1. No. 14 Wire - 15 Amp Maximum
2. No. 12 Wire - 20 Amp Maximum

B. Wiring

1. Flexible cords worn, frayed or spliced.
2. Flexible cords attached to building, wrapped around pipes, strung in temporary manner, under rugs, through windows and doors, concealed, etc.
3. Unguarded open wires within 8 ft. of the floor.
4. Loose connections between cables or conduits and boxes or motors.
5. Open covers or knockouts on switches, boxes, etc.
6. Equipment conduit or cable not securely mounted or attached.
7. Broken or damaged electrical equipment.
8. Exit lights not burning.
9. Combustible material around or under electrical equipment.
10. Fire alarm system has not been tested at least once each week with a record of such tests maintained.

WISCONSIN FIRE SERVICE TRAINING
LESSON PLAN

CODE-FPI-5-74
TIME:

COURSE: Fire Prevention Inspection
LESSON: Records and Reports
EQUIPMENT REQUIRED:
TRAINING AIDS: Municipal Fire Adm. NFPA Fire Protection Handbook, Inspection Manual

Instructors Notes	Teaching Points
Behavioral Objectives The learner through the use of reports will be able to analyze: Where fires are occurring. When they are occurring. Where fire prevention efforts are needed.	Records and Reports Records and reports are utilized for defining problems and the means of combatting them in the saving of life and property by the fire service. Defining a problem is accomplished through - a. knowledge b. communicating information by use of: (1) books. (2) letters. (3) discussion of problem. (4) reports. Statistical information gained through use of records and reports should indicate: What. Where. When. How. What are the problems to be defined? a. What is there to burn? (1) Through use of fire prevention inspection and pre-planning reports - (a) size of area. (b) number and kind of buildings. (c) occupancy type.

Instructors Notes

Training Points

(d) type of operations.
(e) storage of material.
(f) special hazard materials.

b. what is burning?

(1) Utilize fire reports which will indicate:

(a) number of fires.
(b) pattern of problem by location of fires.
(c) types of construction and occupancies involved
(d) what burned.

c. Why is it burning?

(1) The importance of complete and accurate reporting cannot be over-emphasized. This question is most effectively answered through the use of:

(a) fire reports.
(b) fire investigation reports.
(c) fire prevention inspection reports.

d. When is it burning?

(a) fire reports
(b) investigators reports.

e. What is being done to correct this problem?

(1) Fire Prevention Bureau Reports.

(a) general inspections

1. regular building.
2. reinspections.
3. pre-fire inspections.
4. special inspections
5. investigation reports.
6. public relations activities.

Instructors Notes	Teaching Points

(2) Other reports involved:

7. fire reports.
8. training reports.
9. manpower allotment.
10. apparatus status.

What is a report?

An official statement of facts or conditions.

What form should it take?

1. Be designed for a specific purpose.

2. Be as simple as possible, yet contain the necessary information.

What is the objective of a report?

Basically to establish a record of:

a. work performed.
b. conditions found.

When preparing reports it is recommended that they meet the "Six C's of Effective Reporting".

1. Clearness.
2. Completeness.
3. Conciseness.
4. Consistency.
5. Concreteness.
6. Correctness.

SUGGESTED FORM

FIRE DEPARTMENT BUILDING RECORD

STATION: _____ CLASSIFICATION: _____ FIRE LIMITS: _____ CARD NUMBER: _____

OWNER: _____ ADDRESS: _____ TEL: _____

AGENT: _____ ADDRESS: _____ TEL: _____

OCCUPANT: _____ BUSINESS: _____ TEL: _____

CONSTRUCTION — WALLS: _____ ROOF: _____ NO. STORIES: _____

HEATING — TYPE: _____ LOCATION: _____ FIRE ALARM: _____

EXTINGUISHERS: _____

SPRINKLERS: COMPLETE: _____ PARTIAL _____ WET: _____ DRY: _____ OTHER: _____

STANDPIPES: YES: _____ NO: _____ HOSE CABINETS: YES: _____ NO: _____ HOSE SIZE: _____

GAS SHUT OFF: _____ ELEC. SHUT OFF: _____

AIR CONDITIONING SHUT OFF: _____

STREET NAME _____ NUMBER

INSURANCE CARRIER; OWNER _____

OCCUPANT _____

ADDITIONAL OCCUPANTS: 1. _____

2. _____

3. _____

SPECIAL HAZARDS: LIQ. OXY: _____ L.P: _____ CHLORINE: _____ HYDROGEN: _____ OTHER: _____

LOCATION OF HAZARDS: _____

_____

FLAMMABLES STORED: _____

DATE	INSPECTOR	CONDITIONS FOUND	DATE	INSPECTOR	CONDITIONS FOUND

INSURANCE CARRIER: OWNER _____

OCCUPANT _____

ADDITIONAL OCCUPANTS: 1. _____

2. _____

3. _____

SPECIAL HAZARDS: LIQ. GAS: _____ L.P: _____ CHLORINE: _____ HYDROGEN: _____ OTHER: _____
LOCATION OF HAZARDS:

_____

_____

FLAMMABLES STORED: _____

DATE	INSPECTOR	CONDITIONS FOUND	DATE	INSPECTOR	CONDITIONS FOUND

YOUR CITY FIRE DEPARTMENT

SOME CITY, WISCONSIN

ELECTRICAL CHECKLIST FOR FIRE INSPECTORS

Owner_____ Location_____

Owner's Address_____

Violations Explained To_____ Date_____

✓--Check if Violation Noted	Electrical Violation or Hazard	Comments (Specific Location, Room, Etc.)
	Overfusing of wires -15 Amp. max, for No. 14 wire -20 Amp. max, for No. 12 wire (Check behind blown fuses for pennies)	
	Flexible cords worn, frayed or spliced.	
	Flexible cord fastened to bldg., wrapped around pipes, strung in temporary manner, under rugs, through windows & doors, concealed, etc.	
	Open covers or knockouts on switches, boxes, etc.	
	Unguarded open wires within 8' of floor.	
	Loose connections between cables or conduits and boxes or motors.	
	Equipment, conduit or cable not securely mounted or attached.	
	Broken or damaged electrical equipment.	
	Fire alarm system has not been tested at least once a week with a record of such tests maintained.	
	Exit lights not burning.	
	Combustible material around or under electrical equipment.	

Correct Violations on or Befor_____ Inspector_____

Street and No. .....

District No. .....

FIRE PREVENTION INSPECTION

Fire Department

	1st QUARTER	2nd QUARTER	3rd QUARTER	4th QUARTER
1 Date of Inspection				
2 Owner				
3 Agent				
4 Occupant				
5 Business				
6 Construction				
7 Height of Building				
8 Roofing and Chimney				
9 Rubbish and Waste				
10 Aisle and Doors in Basement				
11 Stairs				
12 Elevators				
13 Smoke Pipes				
14 Fire Escapes—Fire Doors and Shutters				
15 Flam. Liq's				
16 Fire Appliances				
17 Electric Wiring				
18 Boilers, Furnaces				

(over)

Diagram:

Remarks:

32 Inspector				
33 Notice, No.....Date				

FIRE PREVENTION INSPECTION

District No. .....

Establishment .....

Proprietor ..... Address .....

Bldg. Owner ..... Address .....

Inspection shows violation of certain safety orders of the Industrial Commission promulgated under authority of Chap. 101 of the Revised Statutes of Wisconsin.

Item	Order	Needed Correction

Section 101.20 of the Wisconsin Statutes constitutes every Fire Chief a deputy of the Wisconsin Industrial Commission, and requires him or his appointed inspectors to make inspections periodically for the purpose of ascertaining and causing to be corrected any conditions liable to cause fire, or any violation of any law or local ordinance relating to fire hazards or prevention of fires.

Compliance Date ..... Inspection Date .....

Notice No. .....

FIRE DEPARTMENT INSPECTOR

REFERRAL NOTICE

(_____) FIRE DEPARTMENT
your city

TO: ☐ Local Building Inspection Department
☐ Wisconsin Department of Industry, Labor & Human Relations

THE FOLLOWING VIOLATIONS OF THE MUNICIPAL CODE OF THE CITY OF (_____) AND/OR WISCONSIN ADMINSTRATIVE CODE, WERE NOTED AT:
your city

_____ **ON** _____

AND IS HEREBY REFERRED TO YOUR DEPARTMENT FOR WHATEVER REMEDIAL ACTION YOU DEEM NECESSARY.

1. AISLES
   - BLOCKED ---------- A ___
   - INADEQUATE ---------- B ___
   - NOT LIGHTED ---------- C ___
2. ALARM SYSTEM
   - NONE ---------- A ___
   - INADEQUATE ---------- B ___
   - DEFECTIVE ---------- C ___
   - OTHER ---------- D ___
3. BUILDING REPAIRS
   - DANGEROUS CONDITIONS -- A ___
   - OTHER ---------- B ___
4. BURNING
   - NO PERMIT ---------- A ___
   - OUT OF HOURS ---------- B ___
   - ILLEGAL CONTAINER ------ C ___
   - TOO CLOSE TO BUILDING - D ___
5. CHEMICALS
   - IMPROPER STORAGE ------ A ___
   - NO PERMIT ---------- B ___
6. COMBUSTIBLES
   - EXCESSIVE STORAGE ------ A ___
   - IMPROPER STORAGE ------ B ___
7. DOORS
   - BLOCKED ---------- A ___
   - NOT SELF-CLOSING ------ B ___
   - UNAPPROVED ---------- C ___
   - NONE AS REQUIRED ------ D ___
8. DUCTS
   - NO FIRE DAMPER -------- A ___
   - OTHER ---------- B ___
9. ELECTRICITY
   - OVERLOADED ---------- A ___
   - DEFECTIVE ---------- B ___
   - EXTENSION CORDS -------- C ___
   - OTHER ---------- D ___
10. ELEVATORS
    - EMERGENCY TOOLS/KEY --- A ___
    - IMPROPER ENCLOSURE ---- B ___
    - PIT AREA ---------- C ___
    - OTHER ---------- D ___
11. EXIT LIGHTS
    - OUT ---------- A ___
    - NEEDED ---------- B ___
    - WRONG TYPE / LOCATION -- C ___
12. EXTINGUISHERS
    - RECHARGE ---------- A ___
    - HANG ---------- B ___
    - REPAIR OR TEST ---------- C ___
    - INADEQUATE ---------- D ___
    - WRONG TYPE ---------- E ___
13. EXITS
    - INSUFFICIENT ---------- A ___
    - NOT INDICATED / LIGHTS - B ___
    - BLOCKED OR LOCKED ------ C ___
    - WRONG TYPE ---------- D ___
    - WRONG HARDWARE ---------- E ___
14. EXPLOSIVES
    - IMPROPER STORAGE -------- A ___
    - NO PERMIT ---------- B ___
    - OTHER ---------- C ___
15. FIRE DOOR
    - BLOCKED / INOPERATIVE -- A ___
    - NO CLOSING DEVICE ------ B ___
    - INADEQUATE ---------- C ___
    - NONE ---------- D ___
16. FIRE ESCAPE
    - DEFECTIVE / REPAIRS ---- A ___
    - NONE AS REQUIRED -------- B ___
    - INADEQUATE OR WRONG ---- C ___
17. FLAMEPROOFING
    - CURTAINS / DRAPES ------ A ___
    - DECORATIONS ---------- B ___
18. FLAMMABLE LIQUIDS
    - IMPROPER STORAGE -------- A ___
    - NO SAFETY CAN ---------- B ___
    - TOO CLOSE TO HEAT ------- C ___
    - IMPROPER DISPENSING ---- D ___
    - NO PERMIT ---------- E ___
19. HOUSEKEEPING
    - AREA/YARDS/BUILDING ---- A ___
20. ISOLATIONS / ENCLOSURES
    - NONE ---------- A ___
    - INCOMPLETE ---------- B ___
    - DOOR NOT TO CODE -------- C ___
    - OPENINGS UNPROTECTED ---- D ___
21. OPEN FLAME DEVICES
    - OPEN TOP / SIDES -------- A ___
    - USE NOT TO CODE ---------- B ___
22. PAINT SPRAYING
    - VENT ---------- A ___
    - BOOTH NOT TO CODE / NONE B ___
    - NO SPRINKLER HEADS ------ C ___
    - OTHER ---------- D ___
23. RUBBISH-WASTES
    - EXCESSIVE ---------- A ___
    - IMPROPER DISPOSAL ------- B ___
    - OTHER ---------- C ___
24. SMOKE PIPES
    - REPAIR ---------- A ___
    - NO THIMBLE ---------- B ___
    - TOO CLOSE TO COMBUSTIBLES B ___
    - NOT SEALED IN CHIMNEY --- D ___
    - OTHER ---------- E ___
25. SPRINKLERS
    - DEFECTIVE HEADS ---------- A ___
    - INCOMPLETE COVERAGE ----- B ___
    - STORAGE TOO CLOSE TO HEAD D ___
    - OTHER ---------- E ___
26. STAIRS
    - NO HANDRAIL ---------- A ___
    - BLOCKED ---------- B ___
27. STANDPIPES-HOSE CABINETS
    - THREADS/HOSE ---------- A ___
    - REPAIR/OTHER ---------- B ___
28. WELDING
    - NO PERMIT ---------- A ___
    - NO FIRE CURTAIN ---------- B ___
    - TOO CLOSE TO COMBUSTIBLES-C ___
29. OTHER VIOLATIONS
    - SEE REMARKS BELOW ------- A ___

REMARKS

INSTRUCTIONS
White Copy: Building Inspection Dept.
Blue Copy: Fire Dept. File Copy
Yellow Copy: Dept. of Industry, Labor & Human Relations

_____
FIRE INSPECTION RECORD OFFICER

DATE: _____

REFERRAL NOTICE

FIRE LIMITS	OUT OF FIRE LIMITS

No._____

YOUR CITY FIRE DEPARTMENT
BUREAU OF FIRE PREVENTION

To: Local Building Inspection Dept. ☐

Wisconsin Dept. of Industry, Labor and Human Relations ☐

You are hereby notified that on inspection of the premises

Located at _____

Description and use _____

Owned by _____

Address of owner _____

Occupied by _____

the following conditions were found to exist:

INSTRUCTIONS

Triplicate Copies

White Copy
Building Inspection Dept.

Blue Copy
Fire Dept. File Copy

Yellow Copy
Dept. of Industry, Labor & Human Relations.

Inspector _____

SCHOOL INSPECTION CHECK-OFF

DATE:_____.

NAME OF SCHOOL:_____. ADDRESS:_____.

PRINCIPAL:_____. CUSTODIAN:_____ HOURS WORKED:_____.

TOTAL ENROLLMENT:_____. NUMBER OF ROOMS: _____. BUILDING CONSTRUCTION:_____.

BOILERROOM: TYPE OF HEAT:_____. FUEL USED:_____.

MAIN GAS SHUTOFF LOCATION:_____.OTHER FUEL STORAGE:_____.

BOILERROOM ENCLOSED?_____.PROPER FIRE DOOR?_____.

ELECTRICAL: LOCATION OF MAIN DISCONNECT:_____.

BLDG. PROVIDED WITH PROPER EXIT LIGHTS?_____. ILLUMINATED PROPERLY?_____.

EGRESS FACILITIES: NO. OF STAIRWAYS:_____. OPEN OR ENCLOSED?_____. LEAD DIRECTLY OUTSIDE?_____.

STORAGE KEPT FROM UNDER COMBUSTIBLE STAIRS?_____. ALL EXIT DOORS PANIC EQUIPPED:_____.

EXIT DOORS SWING OUTWARD:_____.EXIT DOORS CONDITION:_____.CONDITION OF EXTERIOR ESCAPES:_____.

ALARM SYSTEM: TYPE?_____. WORKING ORDER?_____.

DRILLS CONDUCTED MONTHLY?_____. DRILL CARD POSTED:_____.DATE OF LAST DRILL:_____.

ARE MANUAL ALARM BOXES LOCATED IN ALL NECESSARY LOCATIONS:_____.

INTERIOR PROTECTION: TYPE OF EXTINGUISHERS:_____.DATE OF RECHARGE:_____.

CONDITION:_____. STANDPIPE HOSE?_____.DATE STANDPIPE HOSE LAST INSPECTED:_____.

SPRINKLER PROTECTION?_____.LOCATION OF MAIN VALVES:_____.

HEAT OR SMOKE INDICATORS?_____.HOOKED DIRECTLY TO ALARM SYSTEM?_____.

ROLLING FIRE DOORS:_____.FIREDOORS WITH FUSIBLE LINKS?_____.

ASHES AND RUBBISH STORAGE FACILITIES:_____.FREQUENCY OF REMOVAL:_____.

COMBUSTIBLES STORED PROPERLY?_____.CHEMICALS AND FLAMMABLES STORED PROPERLY:_____.

TYPE, QUANTITY, STORAGE OF CHEMICALS & FLAMMABLES:_____.

GENERAL CONDITION OF PREMISES:_____.

COMMENTS:

OFFICER MAKING INSPECTION:

Report of Weekly Fire Alarm Tests

Name of Establishment _____

Address _____

	1st.	Jan.	Feb.	Mar.
Period covered by this report	2nd.	Apr.	May	June
(circle one)	3rd.	July	Aug.	Sept.
	4th.	Oct.	Nov.	Dec.

Wisconsin Administrative Code Ind.51.24 (5): "All alarm systems shall be tested at least once a week and a record of such tests shall be kept."

Date	Tested by	Results	Comments

Completed report to be sent to the Fire Department at the end of each quarter.

Additional forms may be obtained from the Fire Department.

200-510-AA42856

FIRE ALARM SYSTEM TEST RECORD

IND 51.24 (5) ALL SUCH ALARM SYSTEMS SHALL BE TESTED AT LEAST ONCE A WEEK AND A RECORD OF SUCH TESTS SHALL BE KEPT.

	1973 Tested By		1973 Tested By		1974 Tested By		1974 Tested By		1975 Tested By		1975 Tested By
1		27		1		27		1		27	
2		28		2		28		2		28	
3		29		3		29		3		29	
4		30		4		30		4		30	
5		31		5		31		5		31	
6		32		6		32		6		32	
7		33		7		33		7		33	
8		34		8		34		8		34	
9		35		9		35		9		35	
10		36		10		36		10		36	
11		37		11		37		11		37	
12		38		12		38		12		38	
13		39		13		39		13		39	
14		40		14		40		14		40	
15		41		15		41		15		41	
16		42		16		42		16		42	
17		43		17		43		17		43	
18		44		18		44		18		44	
19		45		19		45		19		45	
20		46		20		46		20		46	
21		47		21		47		21		47	
22		48		22		48		22		48	
23		49		23		49		23		49	
24		50		24		50		24		50	
25		51		25		51		25		51	
26		52		26		52		26		52	

INSTRUCTIONS FOR
APPLICATION FOR ELIGIBILITY--2% FIRE DEPARTMENT DUES

One completed form SB-50, Application for Eligibility--2% Fire Department dues is to be submitted to the Department of Industry, Labor and Human Relations.

Two copies of each Fire Protection Contract are to be submitted to the Department of Industry, Labor and Human Relations. Two copies are required as we forward one to the Wisconsin Insurance Department.

On approval of the Fire Protection Contract and form SB-50, The Department of Industry, Labor and Human Relations will certify to the Wisconsin Insurance Department the areas specified by the contract. Only FULL SECTIONS of the township will be certified.

If the area is under contract for fire protection by another municipality or fire department, a signed releaseshall accompany the contracts submitted.

Section 101.29 Fire Inspection

(1) "The chief of the fire department in every city, village or town, is hereby constituted a deputy of the Department of Industry, Labor and Human Relations, subject to the right of the Department of Industry, Labor and Human Relations to relieve any such chief of a fire department from his duties as such deputy for cause, and upon such suspension to appoint some other person to perform the duty imposed upon such deputy of the Department of Industry, Labor and Human Relations."

(2) "Such chief of the fire department is required, by himself or by officers or members of his department designated by him for that prupose, to inspect all buildings, premises, and public thooughfares, except the interiors of private dwellings, for the purpose of ascertaining and causing to be corrected any conditions liable to cause fire, or any violations of any law or ordinance relating to the fire hazard or to the prevention of fires."

(3) "Such inspection shall be made at least once in six months in all of the territory served by such fire department, and not less than once in three months in such territory as the common council shall have designated or shall thereafter designate as within the fire limits or as a congested district subject to conflagration, and aftener as the chief of the fire department may order." Each sixth months' period shall begin on the first day of January and July, and each three months' period on the first day of January, April, July and October, of each year.

(4) "The chiefs of fire departments in every city of the first, second and third classes shall designate a sufficient number of men as inspectors to carry out the provisions of this section."

(5) "Written reports of inspection shall be made and kept on file in the office of the chief of the fire department in the manner and form required by the Department of Industry, Labor and Human Relations.

(6) "Such inspection shall be subject to the supervision and direction of the Department of Industry, Labor and Human Relations, which shall upon examination certify to the Commissioner of Insurance after the expiration of each calendar year each such city, village or town where the inspections for such year have been made, and records thereof have been made and kept on file as required by law."

NOTE: Under supervisory power of Section 101.29 (6) the Department of Industry, Labor and Human Relations requires the following:

1. Reports of inspection work are to be made promptly to this department on report card forms SB-4 which are mailed to the chief at end of each quarter or each six month period. NOTE: For areas which do not have established fire limits, inspection cards will be mailed to the chief June 30 and December 31 of each year.

2. The affidavit form (SB-3) mailed to each chief annually is to be filled out jointly by him and the city, village or town clerk, and promptly returned to the Department of Industry, Labor and Human Relations.

Unless inspections are reported and affidavit is returned promptly, a city town or village cannot be certified for payment of 2% dues.

Marvin H. Olson
Supervisor, Fire Prevention
Department of Industry, Labor
and Human Relations
GEF-1
201 East Washington Avenue
Madison, Wisconsin 53702

WISCONSIN FIRE SERVICE TRAINING
LESSON PLAN

COURSE: Fire Prevention Inspection
LESSON: Building Construction
EQUIPMENT REQUIRED: Overhead Projector and Screen, Transparencies
TRAINING AIDS: NFPA Fire Protection Handbook and Inspection Manual
Wisconsin State Fire Prevention Manual

Instructors Notes	Teaching Points
Behavioral Objectives The learner will be able to: Identify basic building types. Explain how fire ratings are determined. Formulate fire loading and its relationship to occupancy types and structural requirements. Explain flammability tests and their relationship to occupancy types and structural requirements classification of interior finishes.	**Building Construction** Although the construction plans for: a. Theaters and assembly halls. b. Schools and other places of instruction. c. Apartment buildings, hotels and places of detention. d. Hazardous occupancies. e. Factories, office and mercantile buildings. Must be approved by the Department of Industry, Labor and Human Relations and where ordinances require by a local Building Department, the fire inspector should recognize the various types of construction permitted. **Types of Construction** Fire Resistive Type A (No. 1) All walls, partitions, piers, columns, floors, ceilings, roof and stairs are built of noncombustible material with a fire-resistive rating as specified in Table 51.03-A. May exceed 8 stories or 85 feet in height.
Refer to Ind. 51.03 classes of construction standards, Wisconsin State Fire Prevention Manual pp. 22-25. For details of required fire resistance refer to Table 51.03-A Wisconsin State Fire Prevention Manual.	Fire Resistive Type B (No. 2) All walls, partitions, piers, columns, floors, ceilings, roof and stairs are built of noncombustible material with a fire-resistive rating as specified in Table 51.03-A.

Instructors Notes	Teaching Points
	Metal Frame-Protected (No. 3) Structural parts and enclosing walls are of metal, or metal in combination with other noncombustible material with time resistance ratings as set forth in Table 51.03-A. Buildings of this type shall not exceed 4 stories or 75 feet in height. **Heavy Timber (No. 4)** Structural frame consists of heavy timber or heavy timber in combination with metal, reinforced concrete or masonry. The structural and enclosing wall shall be as set forth in Table 51.03-A. Buildings in this classification shall not exceed 4 stories or 75 feet in height. **Exterior Masonry (No. 5)** All enclosing walls are constructed of masonry or reinforced concrete with fire-resistive ratings as set forth in Table 51.03-A. Buildings in this classification shall not exceed 50 feet in height or contain more than 4 stories. **Metal Frame - Unprotected (No. 6)** Enclosing walls are of unprotected metal or unprotected metal in combination with other noncombustible materials and the other building elements are as set forth in Table 51.03-A. All buildings of this classification shall not contain more than 3 stories or exceed 50 feet in height.

Instructors Notes	Teaching Points

Wood Frame-Protected (No. 7)

Structural parts and enclosing walls are of protected wood, or protected wood in combination with other materials with fire resistive ratings as set forth in Table 51.03-A. If such enclosing walls are veneered, encased or faced with stone, brick, tile concrete, plaster or metal, the building is also termed a wood frame protected building.

All buildings of this classification shall not contain more than 2 stories nor exceed 40 feet in height.

Wood Frame-Unprotected (No. 8)

Structural parts and enclosing walls are of unprotected wood, or unprotected wood in combination with other materials.

All buildings of this classification shall not contain more than 2 stories nor exceed 35 feet in height.

Fire Resistive Ratings

Are determined by tests of materials under load.

(1) fire exposure.
(2) results in units of time.
(3) assemblies rated in hours of fire resistance.

Three furnaces are used to test.
(1) walls and partitions.
(2) columns.
(3) floor assemblies.

Fire Load

Combustible contents and occupancy determine fire resistance of structure.

It should be estimated in advance.

Both contents and combustible construction must be considered in determining the fire load.

Instructors Notes	Teaching Points
REF: Page 114 Fire Prevention and Inspection Practices 4th Ed. IFSTA also FPHB-NFPA 12th & 13th Ed.	Utilize estimated fire severity by occupancy tables to determine fire load by occupancy in pounds per square foot. Interior finishes can create many problems in a fire emergency due to fire spread, smoke and gas generation and surface fire fuel contribution. To assist in overcoming this problem these finishes are submitted to tunnel tests and the materials receive a rating. The tunnel test using 25 foot samples determines the time of fire spread expressed in a numerical scale. For example: Asbestos - flame spread rating 0 Red Oak - flame spread rating 100 Upon completion of the tests the materials are classified as follows: Class A . . . . . 0 to 20 Class B . . . . . 20 to 75 Class C . . . . . 75 to 200 Class D . . . . . 200 to 500 Class E . . . . . Over 500 These tests are conducted mainly by the Underwriters Laboratories and the Southwest Research Institute. In general, paints and wallpapers are not tested but unusual thickness of application could be a hazard. Plastics create problems during fires due to their ability to produce toxic gases and generate smoke when heated. Manufacturers specifications usually refer to the American Society for Testing Materials test. It is recommended that the fire inspector request tunnel test information as well.

LASSES OF CONSTRUCTION TABLE 5103-A FIRE RESIST . RATINGS IN HOURS (OR FRACTIONS THEREOF)

	BUILDING ELEMENT	MODIFYING CONDITIONS			TYPES OF CONSTRUCTION								
			SEE NOTES ①②		FIRE RESISTIVE TYPE A	FIRE RESISTIVE TYPE B	METAL FRAME PROTECTED	HEAVY TIMBER	EXTERIOR MASONRY	METAL FRAME UNPROTECTED	WOOD FRAME PROTECTED	WOOD FRAME UNPROTECTED	APPLICABLE NOTES
		NUMBER OF STORIES	[illegible] SETBACK [illegible]	BEARING OR NON-BEARING	NO. 1	NO. 2	NO 3	NO 4	NO 5	NO 6	NO 7	NO 8	SEE AND 5103 FOR CONSTRUCTION STANDARDS
1	INTERIOR SUPPORTS (COLUMNS, PIERS, FRAME LEGS, POSTS)	[illegible]			NC-4	NP	NP	NP	NP	NP	NP	NP	①④
2		[illegible] OR LESS			NC-3	NC-2	SEE AND 5103(5) NT OR 1	SEE AND 5 5310(4) NT OR 1	SEE AND 5-0310 2	SEE AND 5-0310 NC-2	SEE AND 5103(7) 3/4		①④⑤
3	FLOOR FRAMING (BEAMS, GIRDERS, JOISTS, SLABS, DECK)	MORE THAN 2 STORIES			NC-3	NC-2	SEE AND 5103(4) NC-1	SEE AND 5103(4) NT OR 1	SEE AND 5103.5 0	SEE AND 5-0310 NC-2	NP	NP	④
4		2 STORIES OR LESS			NC-2	NC-1	NC-1	SEE AND 5-0310 NT OR 1 [illegible] OR 2		NC-0	3/4		④⑤
5	ROOF FRAMING	OVER 2 STORIES OR MORE THAN [illegible]			NC-2	NP	NP	NP	NP	NP	NP	NP	①
6	(TRUSSES, BEAMS, GIRDERS, JOISTS, FRAME RAFTERS, PURLINS, DECK)	2 STORIES OR LESS			NC-2	NC-1 1/2	SEE AND 5-0310 NC-1	SEE AND 5-0310(4) NT OR 1	SEE AND 5-0310 0	SEE AND 5-0310 NC-0	NP	NP	④
7		2 STORIES OR [illegible]			NC-1	NC-1	NC-1	SEE AND 5-0310 NT OR 1	SEE AND 5-0310 0	NC-0	3/4	0	④⑤
8		1 STORY - ROOF FRAMING MORE THAN [illegible]			SEE AND 5-0310 NC-0	SEE AND 5-0310 NC-0	NC-0	SEE AND 5-0310 NT OR 1	0	0	0	0	①
9		1 STORY - ROOF FRAMING [illegible]			NC-1	NC-1	NC-1	SEE AND 5-0310	0	0	3/4	0	④⑤
10	ROOF COVERING	OVER 2 STORIES OR MORE THAN [illegible]			CLASS A	NP	NP	NP	NP	NP	NP	NP	①
11		2 STORIES OR LESS OR LESS			CLASS A	CLASS A	CLASS A	CLASS B	CLASS B	CLASS C	CLASS C	CLASS C	①
12	EXTERIOR WALLS & COURT WALLS		LESS THAN 10 FT	BEARING	NC-4	NC-3	NC-2	NC-2	NC-2	NC-2	NP	NP	①④⑥⑦
13	INCL EXTERIOR COLUMNS, POSTS, FRAME LEGS & ALL FRAMING IN CONTACT WITH THE WALL, BUT NOT INCL INTERIOR FURRING ATTACHED TO INSIDE SURFACE OF WALL)		10 FT TO 30 FT. INCLUSIVE	BEARING	NC-3	NC-2	NC-3/4	1	NC-1	NC-0	3/4	0	①④⑤⑥⑦⑧
14			OVER 30 FT.	BEARING	NC-2	NC-1	NC-0	1	NC-1	NC-0	3/4	0	①④⑤⑥⑦⑧
15			LESS THAN 10 FT.	NON-BEARING	NC-2	NC-2	NC-1	NC-1	NC-1	NC-1	NP	NP	①④⑥⑦
16			10 FT TO 30 FT. INCLUSIVE	NON-BEARING	NC-1	NC-1	NC-0	1	NC-1	NC-0	3/4	0	①④⑤⑥⑦⑧
17			OVER 30 FT.	NON-BEARING	NC-0	NC-0	NC-0	0	NC-1	NC-0	3/4	0	①④⑤⑥⑦⑧
18	INTERIOR WALLS BEARING				NC-3	NC-2	NC-1	NC-2	1	NC-0	3/4	0	④⑤
19	PARTITIONS				NC-1	NC-3/4	NC-0	0	0	0	0	0	①
20	REQUIRED EXIT CORRIDOR PARTITIONS				NC-1	NC-3/4	NC-3/4	3/4	3/4	3/4	3/4	0	④⑤
21	FIRE ENCLOSURE (STAIRWAYS, ELEVATORS, VERTICAL SHAFTS)	3 STORIES OR MORE			NC-2	NC-2	1	1	1	1	NP	NP	④⑪
22	PENTHOUSE WALLS				NC-0	NC-0	NC-0	0	NC-0	0	0	0	①
23	PENTHOUSE WALLS				NC-0	NC-0	NC-0	0	0	0	0	0	①⑨

KEY TO ABBREVIATIONS :

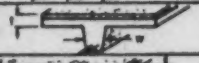
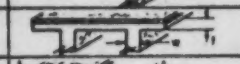
NC – NON COMBUSTIBLE
NP – NOT PERMITTED
HT – HEAVY TIMBER
P/L – PROPERTY LINE

KEY EXAMPLE TO READING CHART :

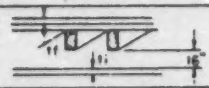
0 = 0 (NO HOUR RATING)
1 = COMBUSTIBLE OR NONCOMBUSTIBLE 1 HOUR RATING
2 = NONCOMBUSTIBLE 2 HOUR RATING

① – SEE OCCUPANCY SECTIONS OF THE CODE FOR OTHER BASIC REQUIREMENTS AND MORE RESTRICTIVE LIMITATIONS.
② – ROOF COVERING SAME AS FOR MAIN BUILDING.
③ – WALLS OF SOLID WOOD 4" IN THICKNESS ARE ACCEPTABLE AS EQUAL TO ONE HOUR FIRE-RESISTIVE RATING.
④ – FIRE RESISTIVE REQUIREMENTS ALSO APPLY FOR THOSE BRACING MEMBERS REQUIRED FOR GRAVITY LOADING.
⑤ – REFER TO TABLE 5100-B FOR ALLOWABLE AREAS FOR WINDOWS AND OTHER OPENINGS IN EXTERIOR WALLS.
⑥ – FOR EXCEPTIONS REFER TO SEC. 51.02
⑦ – SETBACKS AND DISTANCES TO P/L OR OTHER BLDGS. ON SAME PROPERTY DO NOT APPLY TO P/L ALONG STREETS.
⑧ – APPROVED FIRE-RETARDANT TREATED WOOD IS ACCEPTABLE AS EQUAL TO 3/4 HOUR FIRE-RESISTIVE RATING.

TYPICAL EXAMPLES OF FIRE RESISTIVE STRUCTURAL COMPONENTS TABLE 2

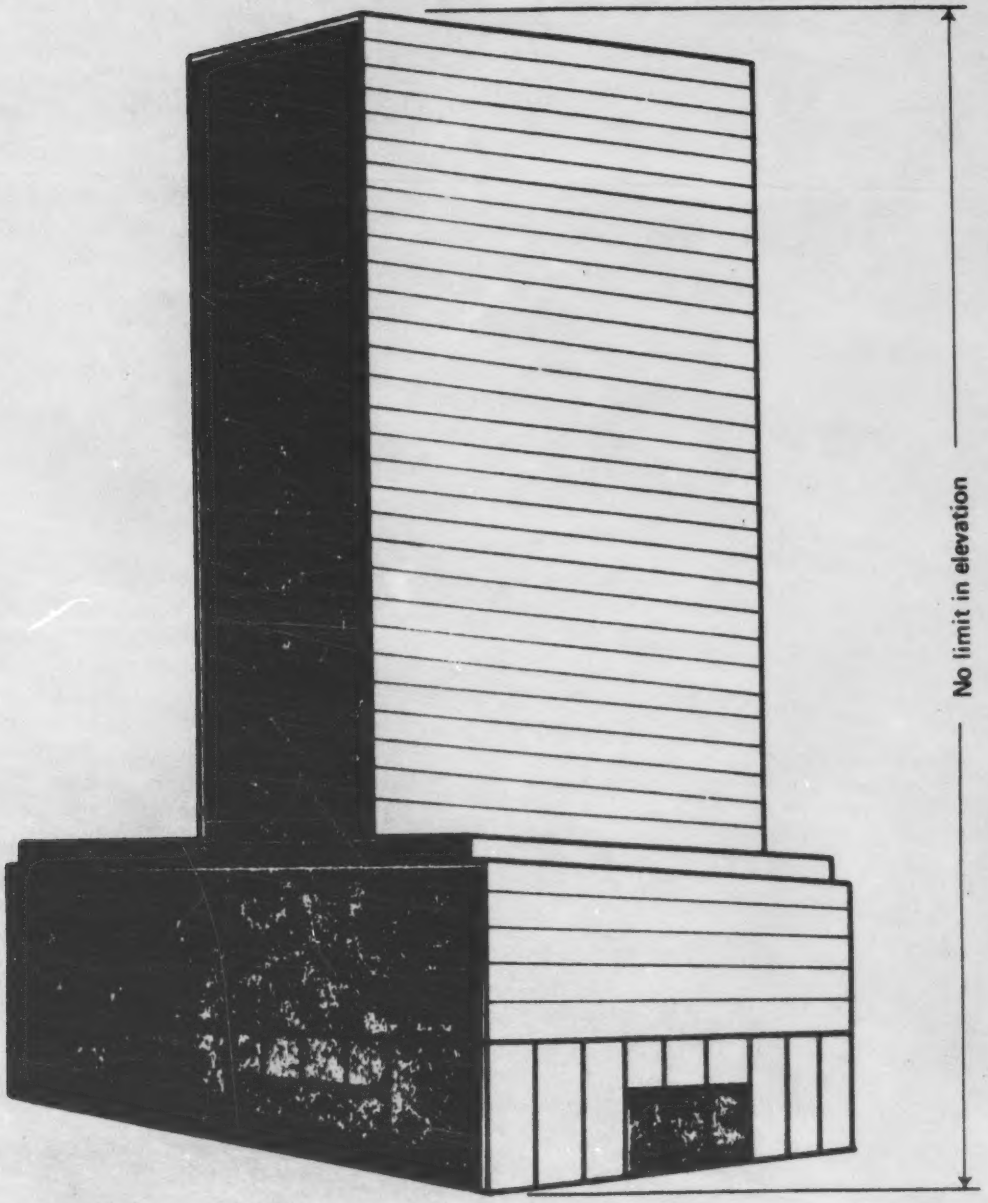
TYPE OF CONSTRUCTION		ROW NO.	STRUCTURAL COMPONENTS	SKETCHES	INSULATING MATERIAL	DESCRIPTION	MINIMUM REQUIREMENTS 4 HR.	3 HR.	2 HR.	1 HR
COMPONENTS WITHOUT APPLIED PROTECTION	CONCRETE CAST IN PLACE AND PRECAST MILD STEEL REINF.	1.	COLUMNS		CONCRETE TYPE I II & III (a)(b)	REINF. COVER MIN. DIM. & AREA-SQ. IN.	I II III 2 2 2 12-144	I II III 2 2 2 10-120	I II III 1½ 1½ 1½ 8-64	I II III 1½ 1½ 1½ 8-48
		2.	GIRDERS AND BEAMS		CONCRETE TYPE I II & III (a)(b)(n)	REINF. COVER WIDTH (w)	2 2 2 8 8 8	1½ 1½ 1½ 8 8 8	1½ 1½ 1½ 6 5 4	1 1 1 4 4 4
		3.	JOISTS & WAFFLES WITHOUT FILLERS OR PARTIAL FILLERS OF TYPE I OR II MASONRY OR CLAY TILE		CONCRETE TYPE I II & III (a)(b)(c)(f)(g)(n)	REINF. COVER WIDTH WEB (w) TH. TOP SLAB (t)	1 1 1 6 6 6 6½ 7 5½	1 1 1 5 5 5 5½ 6½ 4½	¾ ¾ ¾ 4 4 4 4½ 5 3½	¾ ¾ ¾ 4 4 4 3½ 3½ 2½
		4.	SLABS OR JOISTS & WAFFLES WITH TYPE I OR II MASONRY OR CLAY TILE FILLER		CONCRETE TYPE I II & III (a)(b)(c)(f)(g)(n)	REINF. COVER TOP SLAB (t)	1 1 1 6½ 7 5½	1 1 1 5½ 6½ 4½	¾ ¾ ¾ 4½ 5 3½	¾ ¾ ¾ 3½ 3½ 2½
		5.	WALLS AND PARTITIONS BR'G. & NON-BR'G.		CONCRETE TYPE I II & III (a)(b)(c)	REINF. COVER THICKNESS (t)	1 1 1 6 6½ 5	1 1 1 5 5½ 4½	¾ ¾ ¾ 4 4½ 4	¾ ¾ ¾ 3 3 3
	CONCRETE PRECAST & CAST IN PLACE POSTTENSION OR PRETENSIONED SIMPLE SPAN	6.	GIRDERS AND BEAMS		CONCRETE TYPE I II & III (a)(b)(n)	AVE. COVER (w)	I & II III 3½ 3 11 10	I & II III 3 2½ 9½ 8	I & II III 2½ 2 7 6½	I & II III 1¾ 1¾ 4 4
		7.	JOISTS AND WAFFLES		CONCRETE TYPE I II & III (a)(b)(c)(d)(e)	AVE. COVER AVE WEB TH (w) SLAB TH. (t)	3½ 3 11 10 6¾ 7 5½	3 2½ 9½ 8 5¾ 6 4½	2½ 2 7 6½ 4¾ 5 3¾	1¾ 1¾ 4 4 3¾ 3½ 2¾
		8.	SINGLE TEE		CONCRETE TYPE I II & III (a)(b)(c)(d)(e)	AVE COVER AVE WEB TH (w) TOP THICK'S (t)	2½ 2 8 8 6¾ 7 5½	1¾ 1¾ 8 8 5¾ 6 4½	1¾ 1¾ 8 8 4¾ 5 3¾	1¾ 1¾ 4 4 3¾ 3½ 2¾
		9.	MULTI-TEE UNITS		CONCRETE TYPE I II & III (a)(b)(c)(d)(e)	AVE COVER AVE WEB TH (w) TOP THICK'S (t)	BY TEST OR LISTING BY APPROVED TESTING LAB		2 4 4½	1¾ 4 3½
		10.	SOLID & CORED SLABS		CONCRETE TYPE I II & III (a)(b)(c)(d)(e)(n)	t, OR t/2 AVE. COVER	6¾ 7 5½ 2½ 2¼	5¾ 6 4 2 1¾	4½ 5 3¾ 1⅝ ½	3¾ 3½ 2¾ 1 1
	MASONRY BEARING AND NON BEARING	11.	UNREINFORCED CONCRETE WALLS & PARTITIONS		CONCRETE TYPE I II & III (a)(m)	WALL TH. (t)	6 6½ 5	5 5½ 4½	4 4½ 4	3 3 3
		12.	HOLLOW MASONRY WALLS & PARTITIONS.. BLOCK TILE CORED BRICKS CAVITY WALLS		MASONRY TYPE I MASONRY TYPE II (f)(g)(m)	EQUIV. THICK'S EQUIV. THICK'S	6.7 5.7	5.7 4.8	4.5 3.8	3.0 2.6
		13.	SOLID MASONRY BRICK BLOCK..CLAY TILE WITH LESS THAN 25% VOIDS OR WITH THE CORES FILLED		MASONRY TYPE I & II CLAY, SHALE, CONCRETE, SAND OR LIME (n)	WALL TH. (t)	8"	8"	8"	4"
COMPONENTS WITH DIRECT APPLIED PROTECTION	STEEL	14.	COLUMNS		CONCRETE TYPE I II & III (a)(g) SOLID MASONRY (i)	THICKNESS OF (t) PROTECTION	I II III 2 2½ 3¾ 3¾	I II III ½ 2 3¾ 3¾	I II III 1 1½ 2¼ 2¼	I II III 1 1 2¼ 2¼
		15.	GIRDERS .BEAMS. TRUSSES		CONCRETE TYPE I II & III (a)(g)	THICKNESS OF (t) PROTECTION	I II III 2 2½	I II III ½ 2	I II III 1 1½	I II III 1 1
		16.	COLUMNS BEAMS GIRDERS.. TRUSSES JOISTS & STEEL FLOOR UNITS		SPRAYED FIBER...CEMENTITIOUS MIXTURE...INTUMESCENT PAINTS		BY TESTS OR LISTING BY APPROVED TESTING LAB			

TYPICAL EXAMPLES OF FIRE RESISTIVE STRUCTURAL COMPONENTS, TABLE 2 (CON'T.)

TYPE OF CONSTRUCTION		No.	STRUCTURAL COMPONENTS	SKETCHES	INSULATING MATERIAL	DESCRIPTION	MINIMUM REQUIREMENTS 4 HR	3 HR	2 HR	1 HR
COMPONENTS WITH SUSPENDED OR ATTACHED PROTECTION	CONC.	17	CONCRETE JOISTS OR WAFFLE		ⓑ ⓒ ⓓ CONCRETE TYPE I, II OR III 3/4" COVER	1/2 THICK OF SLAB	3"	2"		
					VERMICULITE...GYPSUM...OR PERLITE GYPSUM ON METAL LATH	1/2 THICK OF INSULATION	1"	3/4"		
	STEEL FRAMING	18	STEEL COLUMNS		TYPE I & II MASONRY ⓕ 1 1/2" AIR SPACE ⓘ	THICK OF INSULATION	4" SOLID			
		19	STEEL GIRDERS...BEAMS... TRUSSES, JOISTS, COLUMNS INDIVIDUALLY PROTECTED		SPRAYED FIBRE, CEMENTITIOUS MIXTURE...LATH & PLASTER		BY TESTS.. OR APPROVED TESTING LAB		LISTING	BY
		20	STEEL BEAMS, GIRDERS, TRUSSES & JOISTS W/CEILING PROTECTION & MINIMUM 2 1/2 TH TYPE I, II OR III CONCRETE SLAB ⓑ ⓒ ⓓ		SPRAYED FIBRE CEMENTITIOUS MIXTURE, LATH & PLASTER ACOUSTICAL TILE		BY TESTS., OR APPROVED TESTING LAB		LISTING	BY
		21	STEEL STUD PARTITION NON BEARING		GYPSUM PERLITE PLASTER ON PERFORATED GYP LATH...2 1/2" STUD	1/2 PLASTER 1/2 LATH			3/4" / 3/8"	1/2" / 3/8"
					GYPSUM WALL BOARD...3 3/8" STUD	NO. LAYERS THICK, EACH			TWO 5/8"	ONE 5/8"
	COMBUSTIBLE CONSTRUCTION	22	WOOD JOISTS MIN. 2" X 10", WOOD FLOOR ATTACHED CEILING		GYPSUM WALL BOARD, 2-2" X 10" @ 4'-0" c/c, 1/8" PLYWOOD FLOORING	1/2 INSUL				5/8"
					GYP. WALL BOARD, 2" X 10" @ 16" c/c 1/2" PLYWOOD OR 1" X 6" T & G SUB-FLRG	1/2 INSUL. 1/2 FLOORING				5/8" PLYWOOD OR 1" X 3" T & G
		23	WOOD JOISTS MIN 2" X 10", WOOD FLOOR, SUSPENDED CEILING		NON COMBUSTIBLE 2" X 10" 16" c/c ACOUSTICAL TILE W/ 5/8" PLYWOOD	1/2 INSUL				5/8" 1/2" PLYW'D
					OR 1" X 4" T & G. SUB FLOORING	1/2 FLOORING				OR 1" X 6" T & G
		24	WOOD STUD PARTITION MIN 2" X 4" STUD		GYPSUM WALLBOARD	NO. LAYERS / TH OF EACH			TWO 5/8"	TWO 3/8"
					GYPSUM PERLITE PLASTER ON 3/8" GYPSUM LATH	1/2			PLASTER W/1" MES. MESH	9/16"
					GYPSUM & SAND PLASTER ON U.L. LISTED WIRE LATH	3/4				3/4"
					GYPSUM & VERMICULITE PLASTER ON METAL LATH	3/4				3/4"
ⓕ HEAVY TIMBER CONSTRUCTION TABLE										
HEAVY TIMBER SOLID OR LAMINATED		25	COLUMNS		WOOD ALL SPECIES	FLOOR WIDTH X DEPTH MIN NOM				8" X 8"
						ROOF WIDTH X DEPTH MIN NOM				6" X 8"
		26	GIRDERS & BEAMS		WOOD ALL SPECIES	MIN. WIDTH X DEPTH (NOM)				6" X 10"
		27	ARCH & TRUSS FOR ROOF ONLY		WOOD ALL SPECIES	MIN WIDTH X DEPTH EACH MEMBER				4" X 6"
		28	FLOOR & ROOF DECK		WOOD ALL SPECIES	ROOF				2" T & G OR 3" SOLID
						FLOOR				3" T & G + 1" T & G OR 4 SOLID

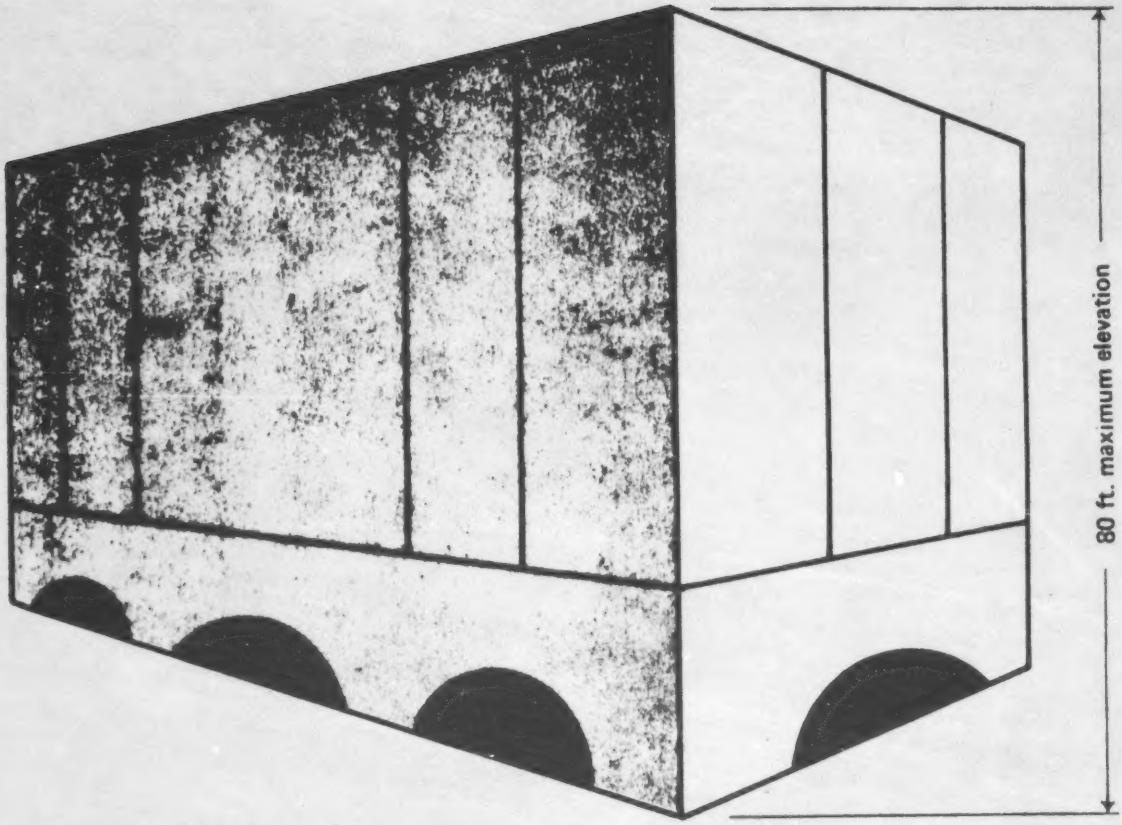
TYPE I BUILDING CONSTRUCTION

Must have 4 hr. protection on all bearing walls and structural members.



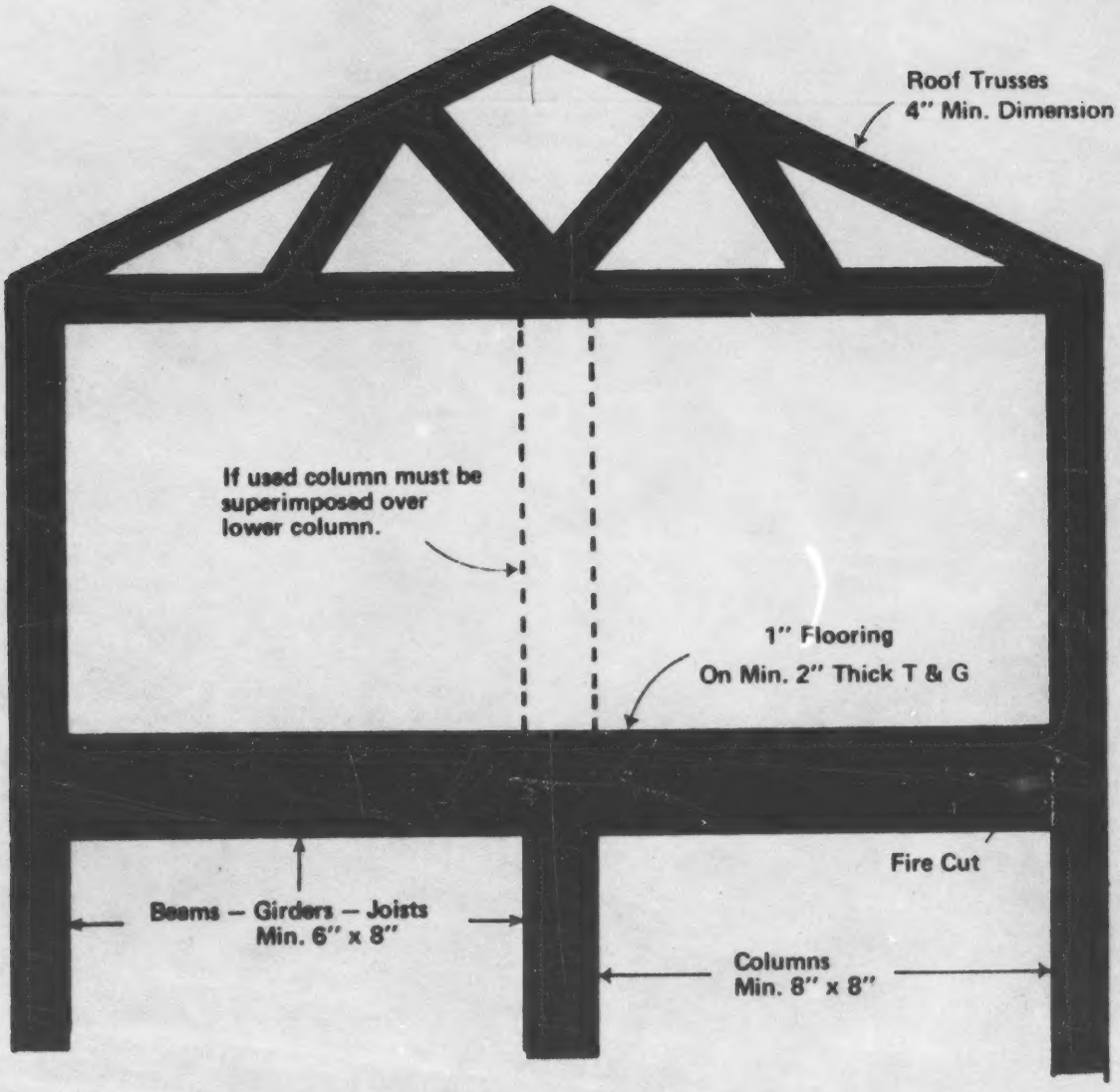
TYPE II BUILDING CONSTRUCTION

Must have 4 hr. protection on all bearing walls and structural members.



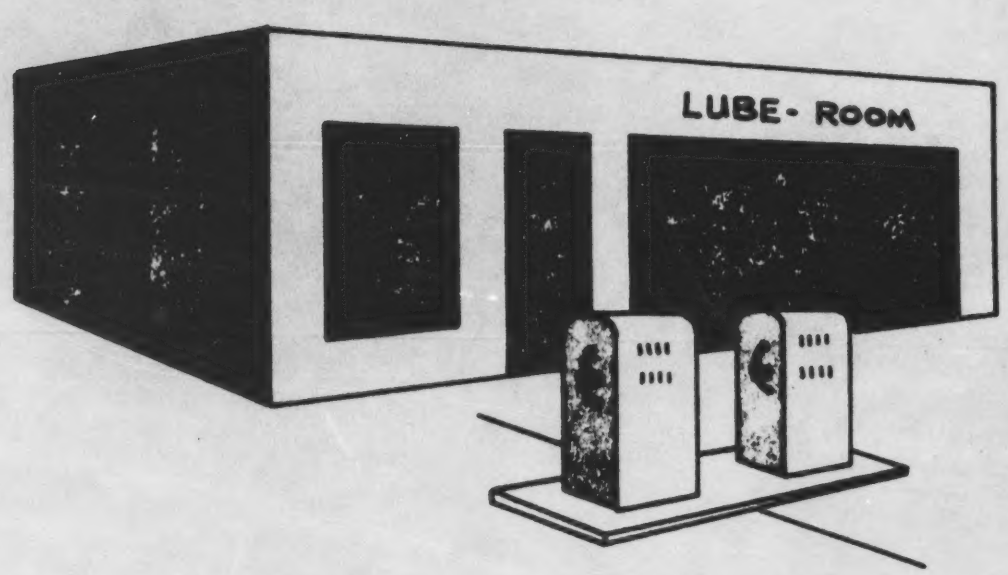
TYPE III BUILDING CONSTRUCTION

Heavy Timber

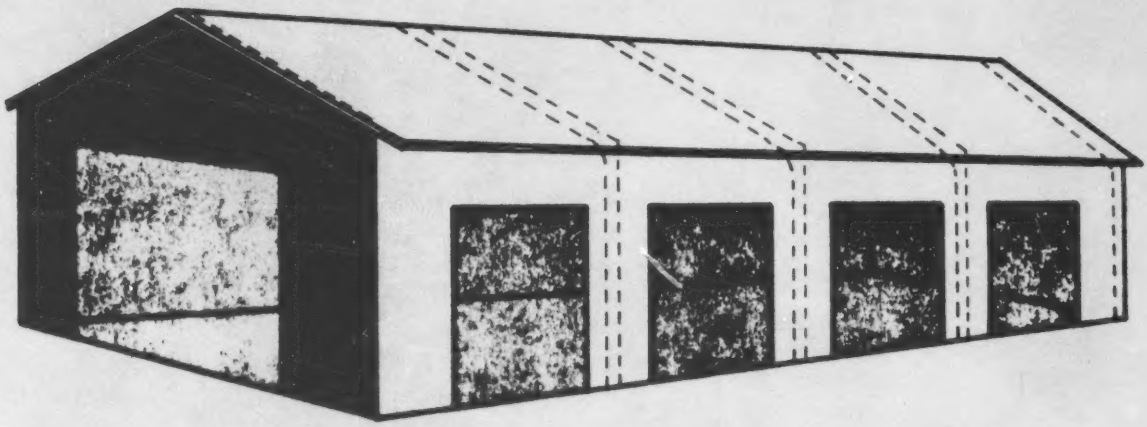


TYPE IV NON-COMBUSTIBLE BUILDING CONSTRUCTION

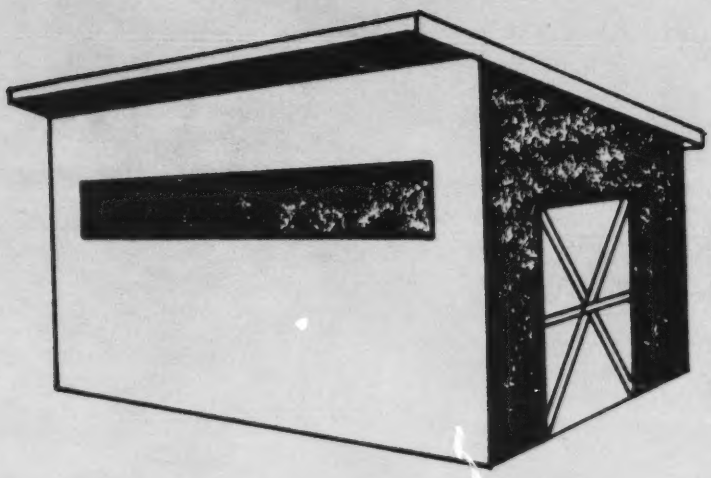
Most Service Stations

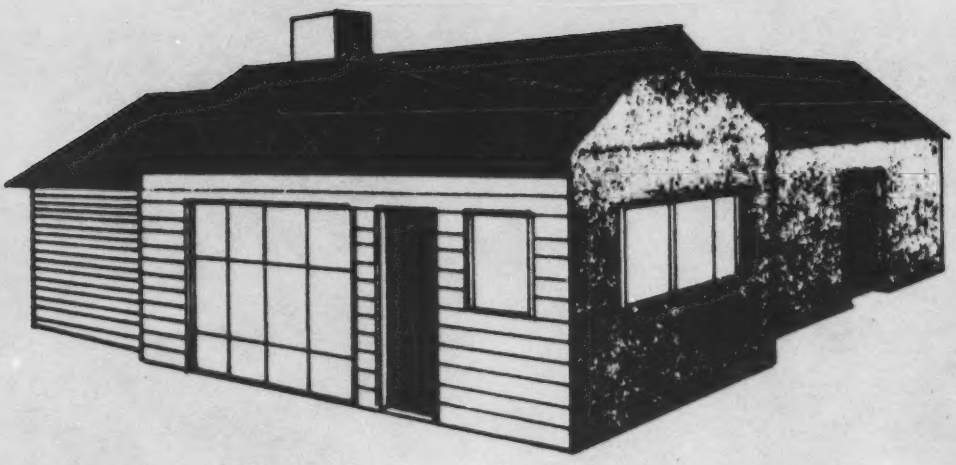


Steel Frame Metal Clad Warehouse



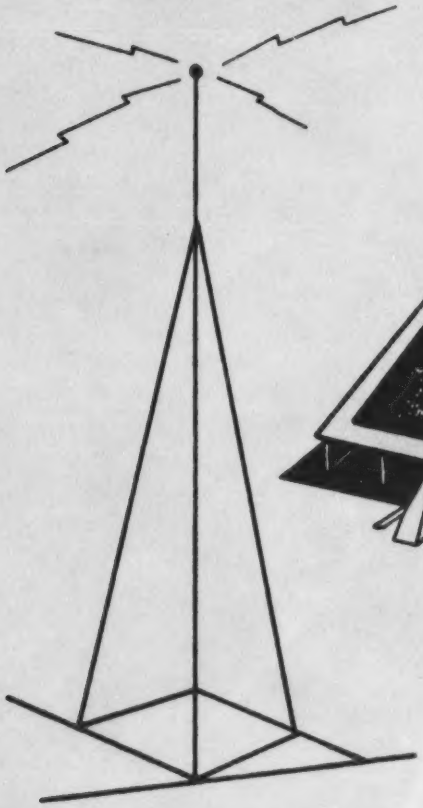
Sheds and Out Buildings
Type V – Non-Fire Resistive



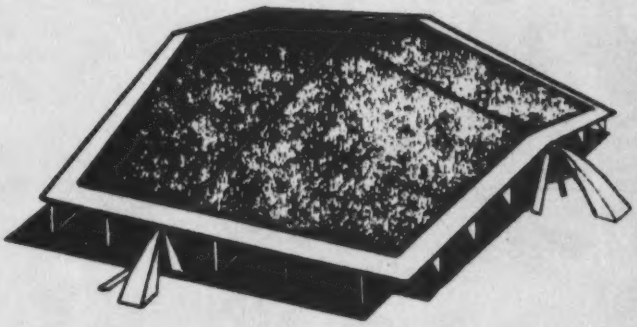


Most Houses
Type V – 1-Hour Fire Resistive Protection

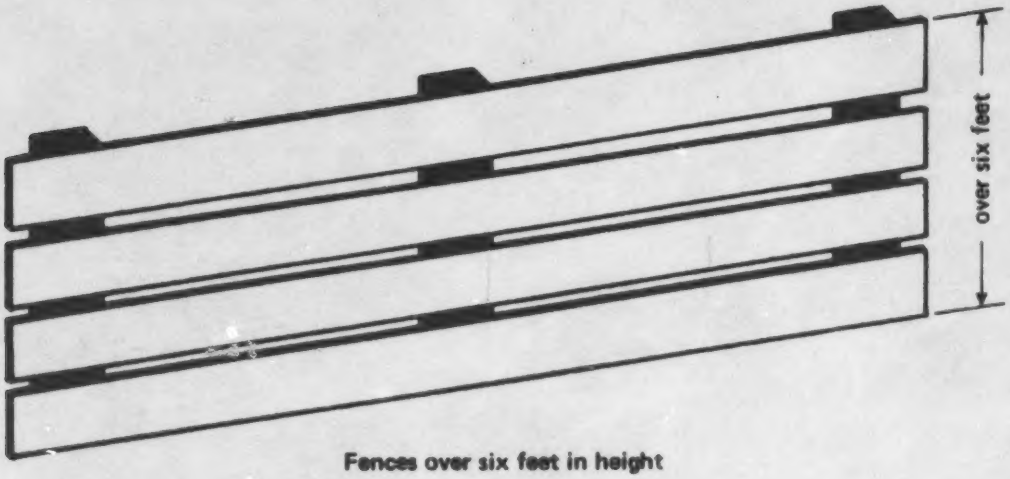
NON CONFORMING STRUCTURES



Radio-T.V. Towers

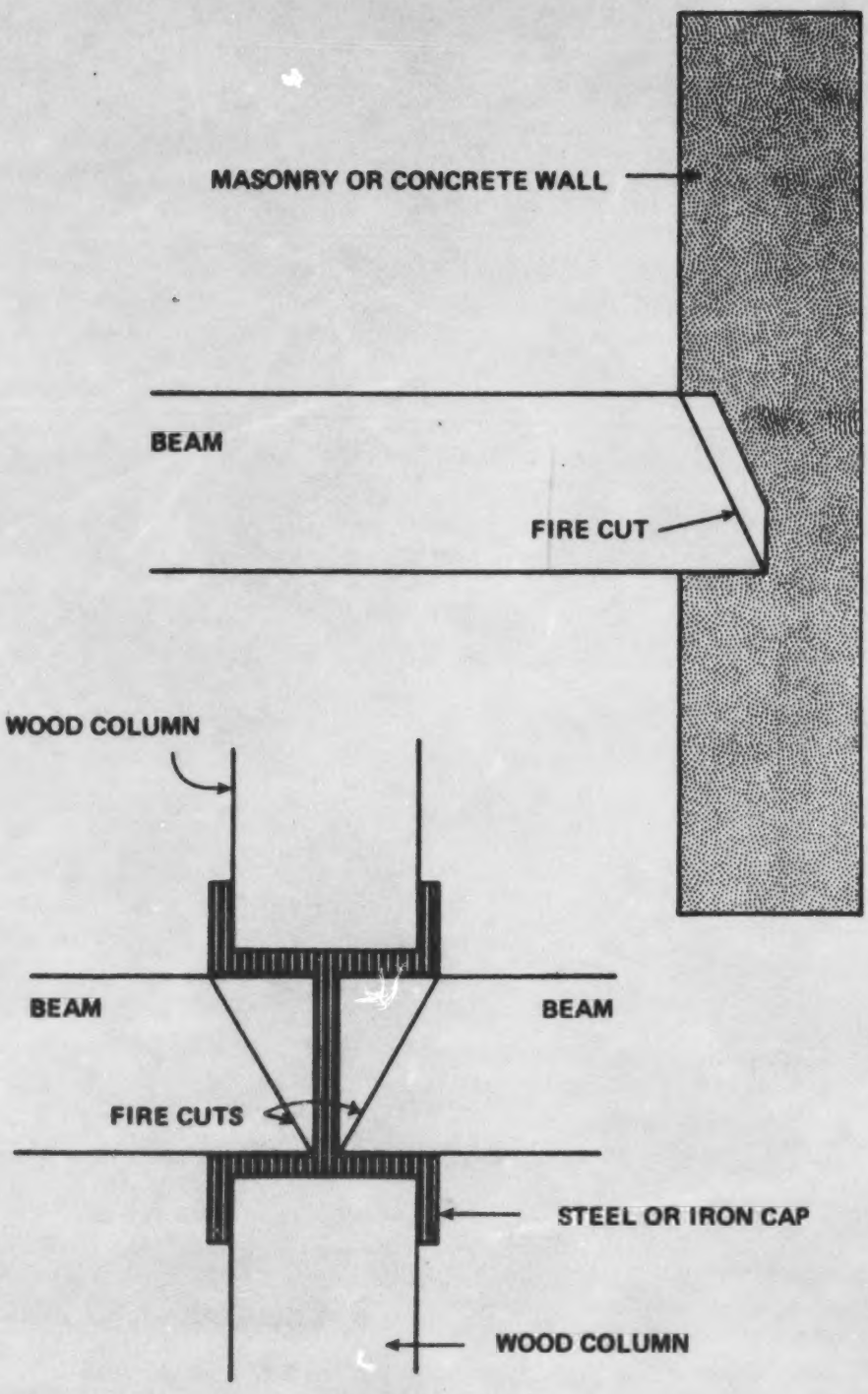


Coliseum

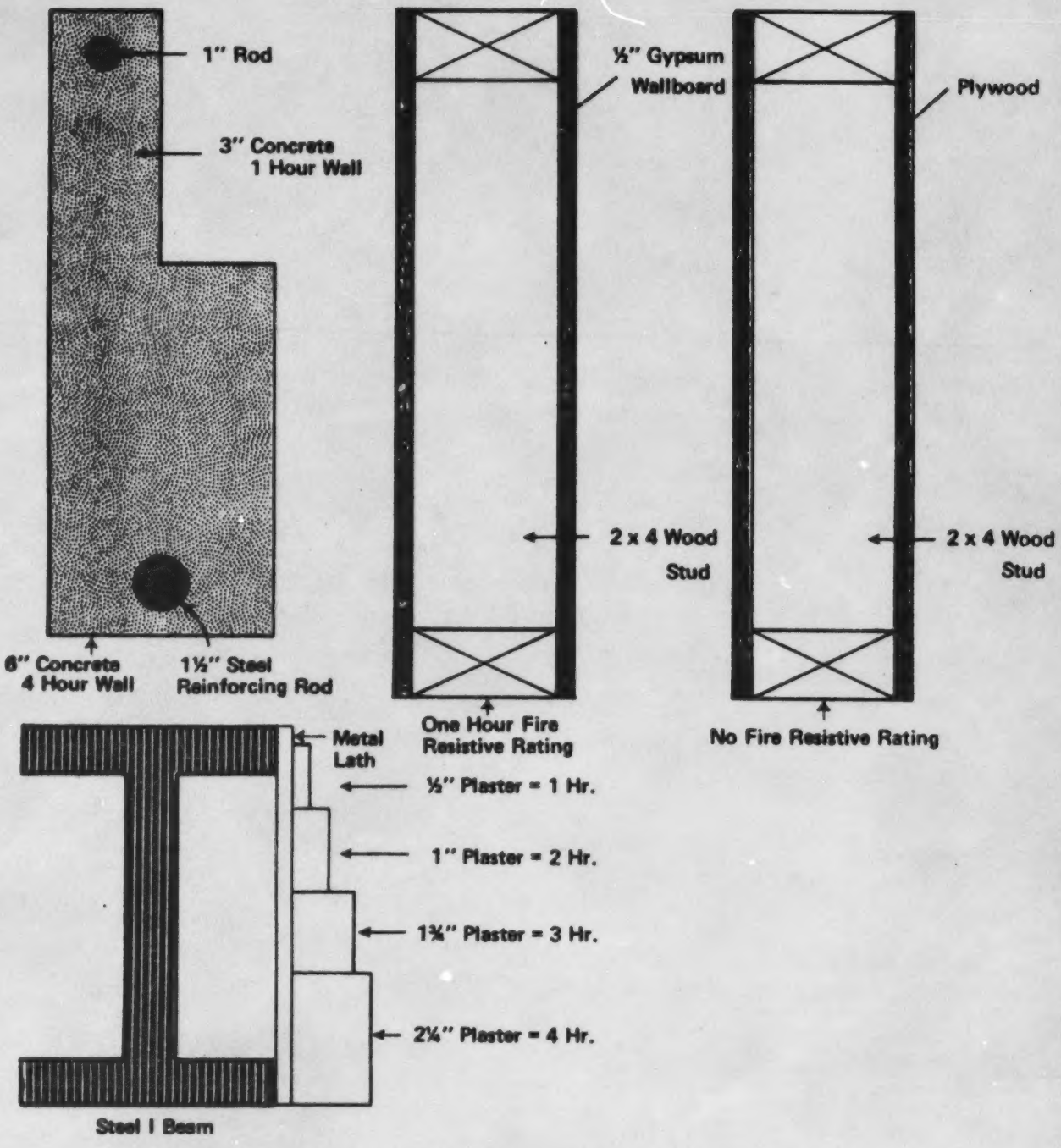


Fences over six feet in height

FIRE CUTS


MASONRY OR CONCRETE WALL
BEAM
FIRE CUT
WOOD COLUMN
BEAM
BEAM
FIRE CUTS
STEEL OR IRON CAP
WOOD COLUMN

FIRE RESISTIVE RATINGS



ABOVE APPLIED TO COLUMNS, BEAMS, GIRDERS AND TRUSSES

Instructors Notes | Teaching Points

Flameproofing paints were designed to assist in reducing the combustibility of interior finishes.

However they are:

(1) no substitute for required fire resistive construction.
(2) limited in their effectiveness.
(3) a problem in maintenance.

In some recent fires it was found that although this type of retardant did slow flame spread it decomposed under heat exposure and created toxic gases.

Soundproofing

Acoustical materials present several problems.

(1) they make the visual determination of flame spread difficult.
(2) this material ranges from highly combustible to non-combustible.
(3) flameproof paint used on this material usually lowers the rating to below 200 but in a fire situation could create other problems.
(4) frequently cemented tiles fall off when heated destroying the flameproofing rating of the material.

It is recommended that tiles be installed using metal clips or furring strips rather than adhesive material.

Plywoods and veneers are not recommended for some occupancies because of:

(1) lack of control over glues and finishes.
(2) rapidity of delamination with resultant rapid burning.
(3) rapid flame spread and burning of finishes.

Instructors Notes	Teaching Points
	An example of this occurred during the LaSalle Hotel fire in Chicago where the loss of 63 lives was caused in part by the delamination of plywood in the lobby.
	Inspect and test decorations and fabrics.
	Use only UL or FM fire resistive decorations - require flameproofing of curtains and drapes.
	Some decorations have flame spread rates of 2,500 feet as was the case in the Coconut Grove Club in Boston where 493 people died in a fire.

WISCONSIN FIRE SERVICE TRAINING
LESSON PLAN

CODE-FPI-7-74
TIME:

COURSE: FIRE PREVENTION INSPECTION
LESSON: CLASSIFICATION OF HAZARDS - OCCUPANCY
EQUIPMENT REQUIRED:
TRAINING AIDS: NFPA FIRE PROTECTION HANDBOOK INSPECTION MANUAL, WISCONSIN STATE FIRE PREVENTION MANUAL

INSTRUCTORS NOTES	TEACHING POINTS
Behavioral Objectives The learner will be able to: Define hazards and their subdivisions. Analyze the relationship between classes of hazards and occupancies. Recognize hazards in the various areas.	A "Fire Hazard" may be defined as any material, condition or act that will contribute to the start of fire or will increase the extent and severity of a fire. Fire hazards are divided into two main subdivisions. 1. Common to most properties. a. heating equipment. b. smoking and matches. c. electrical equipment. d. paper and trash. 2. Special not usual in most properties. a. flammable liquids b. flammable gases c. hazardous chemicals d. explosives e. dusts f. processes In addition to the above there are the "source of ignition" hazards fairly common to all properties. 1. open flame 2. heaters 3. friction 4. electricity 5. chemical action When conducting fire prevention inspections the inspector should be aware of the hazards by occupancy: 1. Residences: a. careless use of smoking materials. b. portable heaters. c. improper installation of heating and cooking appliances. d. storage of flammables and combustibles.

INSTRUCTORS NOTES

TEACHING POINTS

e. electric wiring and equipment.
f. kitchen hazards (grease fires etc.)
g. building construction.

2. Schools or Places of Instruction:

a. exits.
b. careless disposal of waste materials.
c. heating and ventilation equipment.
d. laboratories.

(1) careless storage of combustible and flammable materials or gases.
(2) ineffective supervision of experiments.

e. shops.

(1) material storage.
(2) rubbish removal.
(3) sanding, buffing operations.
(4) welding and cutting operations.

f. stages and auditoriums.
g. trash collection and disposal.
h. smoking and matches.
i. open stairways
j. interior finishes

3. Hospitals and Institutions:

a. Laboratories

(1) improper storage.
(2) anesthetics.
(3) gases.
(4) chemicals and flammable liquids.
(5) heat producing devices.

b. Surgeries:

(1) ineffectiveness of conductive flooring.
(2) improper grounding of equipment.
(3) flammable-explosive anesthetics.

c. Kitchens:

(1) defective wiring or equipment.
(2) cooking hazards (grease fires etc.)

INSTRUCTORS NOTES | TEACHING POINTS

d. Service areas:

(1) heating-air conditioning equipment.
(2) electrical control and distribution equipment.
(3) combustible and flammable storage.
(4) laundry operations.
(5) shop operations - carpenter, maintenance, etc.

In addition to the fire hazards in this type of occupancy, the inspector must be concerned with the LIFE SAFETY HAZARD and insure that the staff personnel at these facilities are WELL TRAINED in:

(1) Fire control.
(2) Fire and Disaster evacuation procedures.

4. Prisons and Jails:

a. accessibility for fire fighting and rescue.
b. proper storage.
c. staff training.

(1) fire control.
(2) evacuation procedures.

5. Nursing Homes:

a. exits.
b. housekeeping.
c. maintenance, testing of fire alarm and protection devices.
d. fire and evacuation drills.

6. Places of Assembly:

a. exits and exit lights.
b. construction.
c. combustible decorations.
d. overcrowding.
e. lack of fire protection devices or maintenance.
f. use and storage of flammable liquids.
g. storage of combustibles.
h. housekeeping.
i. smoking and matches.

INSTRUCTORS NOTES | TEACHING POINTS

j. electric wiring and equipment.
k. use of flame producing devices on stage or elsewhere.
l. heating and air conditioning equipment.
m. seating.
n. outdoor assembly

(1) bleachers.
(2) exits.
(3) tents and awnings.
(4) use of straw or hay.
(5) temporary wiring and equipment.
(6) fire protection equipment.

7. Theaters:

a. exits, lights.
b. heating and air conditioning.
c. decorations, curtains.
d. storage.
e. stage

(1) scenery, props, etc.
(2) fire protection equipment.

f. rubbish removal.
g. smoking and matches.
h. dressing rooms.
i. shops, scenery, painting, etc.

8. Restaurants:

a. exits.
b. heating and cooking.

(1) ranges.
(2) hood and ducts.
(3) deep frying appliances.

c. housekeeping and storage.

9. Office Buildings:

a. exits.
b. vertical shafts.
c. heating and air conditioning.
d. storage.
e. waste disposal.
f. garages and parking ramps where applicable.

INSTRUCTORS NOTES	TEACHING POINTS
	10. Mercantile: a. exits. b. wiring and displays. c. heating. d. rubbish, packing material storage and removal. e. concentration of combustible material. f. housekeeping. g. general storage. h. poor fire record.

WISCONSIN FIRE SERVICE TRAINING
LESSON PLAN

CODE-FPI-8-74

COURSE: Fire Prevention Inspection
LESSON: Occupancy and Maintenance Hazards
EQUIPMENT REQUIRED:
TRAINING AIDS: NFPA Fire Protection Handbook Inspection Manual, Wisconsin State Fire Prevention Manual

INSTRUCTORS NOTES	TEACHING POINTS
Behavioral Objectives The learner will be able to: Name principle points of inspection in a given occupancy. Explain deficiencies in maintenance that would influence fire spread or cause in all types of occupancies.	There are many factors that can and will influence the cause and spread of fire in all types of occupancies. Some of these are listed to assist the inspector in their identification. 1. Warehouses a. Storage (1) height. (2) aisle width. (3) ceiling clearance. (4) sprinkler clearance. (5) lack of accessibility. (6) types of material stored. (7) sprinkler systems. (a) supervision (b) central station - local alarm. (8) Protection equipment (a) standpipes - hose lines. (b) yard hydrants. (c) extinguishers. (9) Housekeeping (10) Disposal of smoking materials. (11) Operation of motor equipment.

Instructors Notes	Teaching Points

2. Lumber Yards

   a. high piling
   b. excessive area.
   c. size and maintenance of aisles.
   d. housekeeping - buildings and grounds. (weeds, sawdust, etc.)
   e. protection equipment.
      (1) extinguishers
      (2) hose houses-hydrants.
      (3) notification (alarm)

   f. heating.
   g. electrical wiring.
      (1) permanent
      (2) temporary
   h. flammable liquids
      (1) paints - laquers thinners, etc.

   i. motorized equipment.

3. Industrial Plants

   a. chemicals (use and storage).
   b. electrical equipment.
   c. housekeeping (buildings and grounds).
   d. flammable liquids (storage and use).
   e. power and heating plants.
   f. processes.

      (1) paint spraying.
      (2) dipping-degreasing.
      (3) salt baths.
      (4) plating

   g. fire protection equipment.

      (1) types.
      (2) does equipment meet protection needs of plant.

   h. plastics

      (1) degree of hazard

   i. conveyor operations

      (1) emergency controls.
      (2) protection between areas.
      (3) static electricity protection.

Instructors Notes	Teaching Points
	j. special process hazards. k. fire brigade. (1) equipment. (2) training program. l. compressed gases. (1) storage and use. m. welding and cutting operations. n. buffing and grinding operations. (1) control of hazardous dust. 4. Laundry and Dry Cleaning a. heat producing devices. (1) irons - pressing machines. (2) steam and hot water sources. (3) dryers. b. use and storage of flammable or combustible liquids. c. control of lint and dust. d. toxic material use or storage. e. housekeeping. f. special construction and protection. (1) fixed extinguishing systems. (2) static grounding. (3) explosion proof motors, switches and lights. g. fire extinguishing equipment. 5. Metal Working Shops a. disposal of combustible metals. b. dust collection equipment. c. heating equipment. (1) facility. (2) special processes. d. buffing, grinding, welding, and cutting.

Instructors Notes	Teaching Points

e. acetylene generation or gas storage.
f. plating operations.
   (1) chemical use and storage
g. open flame operations.
h. spraying or dipping operations.

6. Woodworking Shops

a. saydust collection system.
b. heating equipment.
c. electrical wiring and equipment.
d. disposal of smoking materials.
e. fire protection equipment.
   (1) sprinkler systems.
   (2) extinguishers.
   (3) testing, training, maintenance.

f. painting and finishing operations.
g. use and storage of flammable or combustible materials.
h. housekeeping.

Fire Safety - Maintenance.

a. smoking
   (1) safe areas established.
   (2) rules posted.
   (3) proper facilities, deep ash trays, etc.

b. waste containers.
   (1) rags - rubbish.
   (2) proper design - location.
   (3) construction.
   (4) regular disposal.

c. packing material.
   (1) limited amounts in approved storage containers.

d. waste and rubbish.
   (1) remove
   (2) other combustible storage
      (a) attics, basements, sheds, etc.

e. cleaning materials.
   (1) proper storage in well ventilated area.
   (2) proper storage and daily removal of contaminated rags.

Instructors Notes	Teaching Points
	f. outdoors (1) routine removal of rubbish, dry grass, weeds, etc. (2) select safe storage area for waste material. g. inspect incinerators (inside and outside). (1) location and condition. (2) maintain clear area around incinerator. h. all storage (1) limit fire spread by maintaining small piles. (2) height below sprinkler system and ceiling. (3) separation (a) hazardous materials. (b) maintain aisle widths for access. (4) maintain access for fire fighting and salvage operations. (5) water damage - stock subject to expansion - condition of floors - availability of floor scuppers and drains. (6) floor loads - Normal - with wet stock. (7) access to first aid fire equipment. (8) maintenance and operation of fire doors. (9) outdoor storage. (a) protection. (b) piles and aisles. (c) fences. (d) access, roads, gates, lock types. (e) exposure hazards.

WISCONSIN FIRE SERVICE TRAINING
LESSON PLAN

CODE-FPI-9-74
TIME:

COURSE: Fire Prevention Inspection
LESSON: Fire Protection Devices
EQUIPMENT REQUIRED:
TRAINING AIDS: NFPA Fire Protection Handbook, Inspection Manual, Wisconsin State Fire Prevention Manual.

INSTRUCTORS NOTES	TEACHING POINTS
Behavioral Objectives The learner will be able to: Identify the proper methods of inspecting a sprinkler system. Formulate the relationship of standpipe requirements to building. Formulate the portable extinguisher requirements of the various occupancies. Should there be another statement on alarm devices - such as - Identify alarm devices and proper methods of inspecting the devices.	1. Routine Inspection - Sprinkler Systems. a. determine type. (1) wet. (2) dry. (3) pre-action. (4) deluge. b. water supply. (1) Open Stem and Yoke Value OS & Y Value - stem-out valve open. (2) Post indicator valve (PIV) check legibility of indicator. Is valve sealed in OPEN position with wrench available? (3) Do gauges show proper pressure? c. Proper clearance of heads from: (1) structure. (2) storate. (3) drain valves in working order. (4) five department connections free from obstructions. d. maintenance (1) heads clean, free of paint or foreign material. (2) piping, valves, heads free of corrosion. (3) no sagging piping. (4) no storage on piping.

INSTRUCTORS NOTES	TEACHING POINTS
	e. alarm systems (1) ADT or other protection agency. (2) waterflow alarms tested. (3) valve supervision tested. (4) record of self-inspections, tests and service interruptions available for inspectors viewing. (5) air pressure maintenance. (6) all valves open. f. water supply (1) source. (2) main size. (3) yard hydrants. (4) secondary supply. (a) fire pumps. (b) elevated or pressure tanks.
Refer to Ind. 51.21(2) Standpipes - Wis. State Fire Prevention Manual.	2. Standpipe Requirements a. Fire Department Standpipes (1) In all buildings exceeding 60 feet in height and installed as construction progresses so that they are available to the fire department in the topmost floor constructed. (2) Sufficient standpipes shall be provided so that any area of a floor may be reached within 30 feet by a nozzle attached to 100 feet of hose connected to the standpipe. Where two or more standpipes are required, they shall be cross connected at the bottom and equipped with individual control valves located not higher than the 1st floor.

INSTRUCTORS NOTES

TEACHING POINTS

(3) location

(a) inside enclosed stairways.
(b) where stairways are not enclosed outlets shall be inside or outside of outside walls within one foot of fire towers, interior stairways or fire escape.

(4) F. D. Standpipe Size

(a) buildings less than 75 feet in height - 4 inches in diameter.
(b) buildings in excess of 75 feet in height - 6 inches in diameter.

(5) Connections

(a) 2½ inch NST. with caps and chains where hose is not connected. Control valve provided and connection not more than 5 feet above floor level.
(b) fire department connection (siamese) with check valves connected to standpipe with 4 inch piping shall be provided and marked "To Standpipe." This connection shall not be higher than 3 feet above the ground or sidewalk.

Refer to Ind. 51.21(3) Standpipes - Wis. State Fire Prevention Manual.

b. first aid standpipes

(1) sufficient standpipes shall be provided so that any area of a floor can be reached within 20 feet by a nozzle attached to not more than 75 feet of hose connected to a standpipe.

(2) standpipe size

(a) buildings less than 5 stories in height - 2 inches in diameter.

INSTRUCTORS NOTES

TEACHING POINTS

(b) buildings in excess of 5 stories in height - 2½ inches in diameter.
(c) 1½ inch approved control valve to be located at each story not more than 5 feet above the floor level.
(d) not more than 75 feet of hose with a ½ inch nozzle shall be attached to each outlet.

Where required -

Ind. 54 Factories, Office and Mercantile Buildings.

Ind. 54.14 Standpipe and Fire Extinguishers.
(2) Standard interior first aid standpipes, as specified in Ind. 51.21 shall be provided in all buildings of more than 2 stories and more than 3,000 square feet undivided floor area, where flammable material or any other hazardous condition is present, unless an approved sprinkler system is provided.

Ind. 55 - Theaters and Assembly Halls
Ind. 55.33 Standpipes. Where proper water supply is available, at least one first aid standpipe, as specified in Ind. 51.21, shall be provided on the stage of every theater and assembly hall where a fire curtain is required. Each hose shall not be more than 75 feet long, and where such hose will not reach every part of the stage section additional hose connections and hose, or additional standpipes, shall be provided.

Ind. 57 - Apartment Buildings, Hotels and Places of Detention.

Ind. 57.21 Fire Protection Equipment
(1) standard first aid standpipes shall be provided in every building which is more than 2 stories high and accommodates 20 or more transients, and in all hospitals, asylums and other places of detention.

INSTRUCTORS NOTES

TEACHING POINTS

Buildings with insufficient water supply or accommodating less than 20 transients where standpipes are not provided require a standard fire extinguisher to be placed on each floor at the head of each stairway and at each elevator or group of elevators.

3. Standpipe Inspection Procedure.

   a. survey for damage or deterioration.
   b. make connection to test threads.
   c. dry standpipes - open and close all valves completely.
   d. remove caps, check gaskets and replace.
   e. check siamese connections for foreign objects.
   f. check standpipe nozzles for obstructions.

4. Fire Alarm Systems

   Refer to Ind. 51.24 Fire Alarms for code requirements.

   a. manual alarm box or station location and condition.
   b. do occupants know how to operate?
   c. is alarm test log available for inspection?

5. Automatic Smoke Detection

   (1) activated by smoke.
   (2) local or central station notification.
   (3) reports of tests available to inspector?

6. Waterflow Alarms
   Operated as part of automatic sprinkler systems.

   (1) are valves supervised?
   (2) local or central station notification?
   (3) record of test and inspection available to inspector?

INSTRUCTORS NOTES

TEACHING POINTS

7. Fire Detection Alarms

   (1) heat activated.
   (2) fixed temperature.
   (3) rate of rise.
   (4) record of test and inspection available to inspector?

8. Portable Fire Extinguishers

   a. correct extinguisher for intended protection.
   b. proper number and type.
   c. inspection.
      (1) proper location.
      (2) access maintained
      (3) clearly visible and marked.
      (4) seals unbroken.
      (5) gauge condition (pressure).
      (6) physical damage.
         (a) clogged nozzle.
         (b) damaged hose.
         (c) tank corrosion or leaking.
         (d) weigh where required.
         (e) complete record tag.

Refer to OSHA and the Fire Inspector for approved types, sizes, locations and marking.

WISCONSIN FIRE SERVICE TRAINING
LESSON PLAN

CODE-FPI-10-74
TIME:

COURSE: FIRE PREVENTION INSPECTION
LESSON: EXITS AND LIMITATION OF THE FIRE SPREAD
EQUIPMENT REQUIRED:
TRAINING AIDS: NFPA FIRE PROTECTION HANDBOOK, INSPECTION MANUAL
WISCONSIN STATE FIRE PREVENTION MANUAL

INSTRUCTORS NOTES	TEACHING POINTS
Behavioral Objectives **The learner will be able to:** **Identify & explain fundamental factors relating to exits.** **Relate exits to building construction, height and occupancy hazards.**	**An Exit is a way to get from the interior of a building to the open air at ground level.** 1. Exits. a. Purpose-safe path of escape from fire. b. Factors influency number and location. (1) possible panic (2) occupancy. (a) number of people. (b) severity of expected fire. c. Common defects (1) locked door--remove lock replace with panic hardware. (2) self closer wedged open. --have responsible person remove wedge. (3) closing device does not work, or door hangs up.--- repair device and/or rehang door. (4) Revolving door without alternate exit---not recognized exit. (5) Door access blocked by storage either inside or outside.---remove immediately. (6) Stairs or exitways blocked by storage---remove immediately. (7) Hazardous occupancy-process or material exposing exit.-- Move, install wall, install sprinklers, or provide another exit.

INSTRUCTORS NOTES

TEACHING POINTS

(8) Open stairways and shafts.--Enclose.
(9) Exit locations obscure Install additional exit signs.
(10) Fire escape exposed from fire below.--Install wired glass or relocate.
(11) Fire escape broken, rusted or loose.---Repair and paint.

d. Kinds of Exits.

(1) Doors.
  (a) swing with exit travel.
  (b) vertical sliding or rolling--not an exit
(2) Horizontal.
  (a) may be door thru fire wall.
  (b) large doors for business provide small ones for exits.
(3) Stair enclosures.
(4) Smoke-proof towers.
(5) Ramps. same enclosure as for stairways.
(6) Fire escapes.
  (a) should be stairs not ladders.
  (b) have minimal use in new construction.
(7) Escalators. not exits unless enclosed.
(8) Elevators-not exits.
(9) ropes and portable ladders--may have some private use but not recognized.

e. Signs and Lighting

(1) exit lighting refers to halls and stairwells, etc.
(2) exit signs are referred to as internally illuminated signs.
(3) shall be lit during hours of occupancy.

INSTRUCTORS NOTES

TEACHING POINTS

2. Limiting Fire Spread

a. Fire Stopping.

(1) old buildings check basement.
(2) ALL buildings check:

(a) pipe chases.
(b) electrical service entrance.
(c) around pipes

b. Horizontal Spread.

(1) fire walls - from foundation to and through roof.
(2) fire partition -

(a) divides attic or cockloft spaces.
(b) under floor spaces.

(3) draft curtains used:

(a) under piers.
(b) pier superstructure.
(c) airplane hangars.
(d) lumber sheds
(e) crawl spaces
(f) around spray areas or heat treat for banking heat.

(4) Roof vents-manual and automatic--examine for condition, test operation where possible.

c. Vertical Spread.

(1) elevator shafts.
(2) stairways.
(3) material or rubbish chutes.
(4) dumbwaiters.
(5) trap doors.
(6) pipe chases.
(7) air conditioning ducts--check for dampers.

d. Exposure - External

(1) distance, best method.
(2) fire doors.
(3) wire-glass windows.
(4) exterior sprinklers.

INSTRUCTORS NOTES	TEACHING POINTS
	e. Fire doors and windows. (1) test all doors except rolling steel. (2) check following: (a) fusible link location. (b) door operation. (c) proximity of storage. (d) door condition.